

A REVIEW OF THE WESTWARD REGION
GROUNDFISH MANAGEMENT PROGRAM, 1987-1989

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INTRODUCTION

Management Unit

The Westward Region encompasses state waters (0-3 miles) of the Bering Sea, Aleutian Islands and the Central and Western areas of the Gulf of Alaska (Figure 1). The Alaska Board of Fisheries adopted these management areas in March 1989 to ease parallel management objectives of state and federal waters (ADF&G 1989). The areas described are directly aligned with federal Fishery Management Plan (FMP) areas as developed by the NPFMC for regulation of the Exclusive Economic Zone (EEZ) (3-200 miles).

Groundfish is Alaska's fastest growing fishery. Catches by U.S. fishermen have increased dramatically in recent years and in 1989 amounted to 1.34 million mt in the Westward Region (Figure 2). In 1989, groundfish accounted for 80% of the weight landed (4.2 billion pounds) and 34% of the ex-vessel value (\$456.6 million) of all fish and shellfish species harvested in all of Alaska's waters (Figures 3 and 4, Table 1).

The domestic groundfish industry-both harvesting and processing-has virtually supplanted its foreign counterparts with the phase out of both foreign and joint venture harvesters. In 1989, 78% of the groundfish resource was caught and processed by U.S. fishermen. In 1990, the North Pacific Fishery Management Council (NPFMC) allocated 92% of the nearly 2.5 million mt total allowable catch (TAC) to U.S. fishermen (Figure 5).

The purpose of this report is to present a summary of the 1989 groundfish fisheries in the Westward Region and to review the Alaska Department of Fish and Game (ADF&G) Westward Region groundfish programs from 1987 to 1989.

Program Elements

Westward Region groundfish programs in 1989 included four major projects:

1. An on going domestic observer program that was expanded by funding from the International Pacific Halibut Commission (IPHC), and the Alaska Fisheries Development Foundation (AFDF)/Eagle Fisheries in Kodiak.
2. Continuation of a federally funded (NMFS) domestic groundfish fish ticket collection and entry contract.
3. Groundfish data collection from annual nearshore crab and groundfish trawl assessment surveys.
4. Regional management programs.

The domestic observer program was expanded in 1989 to include work on halibut bycatch rates in the directed flatfish fishery in conjunction with AFDF and Eagle Fisheries, and on halibut bycatch and mortality rates for IPHC. Domestic groundfish landings were monitored throughout Alaska through the federally funded (NMFS) fish ticket program. As in past years, groundfish staff accompanied the 1989 crab and groundfish trawl survey to collect ancillary groundfish data. On going management programs included daily vessel registrations and permits, periodic issuance of emergency orders, and on-demand dissemination of fishery information. A complete review of each of these activities follows.

Budget and Personnel

Over the past three years, the Westward groundfish program has been funded by general fund and special project allocations totalling \$1.1 million. Since 1987, the groundfish observer program has been supported by general fund allocations totaling 696K. These funds have provided the means for approximately 120 man months of observer and support personnel over the past three years. Contract monies from the NMFS for fish ticket collection, editing and entry totalled 293K. Additional special project allocations from the IPHC and AFDF have contributed an additional 125K for at-sea observations and data analysis. Unutilized test fish allocations are not included in this total.

The program was managed by a full-time regional groundfish coordinator through FY 89 and by a regional shellfish/groundfish coordinator in FY 90. Kodiak programs were supported by two seasonal fishery biologists, a seasonal data entry clerk and numerous seasonal and nonpermanent fishery technicians (at-sea observers). Dutch Harbor programs were maintained by a full-time fishery biologist. One man month of fishery biologist time was allocated for fish ticket collection at Sand Point. Additional, unfunded support came from regional shellfish (technicians and clerks) and data processing staff.

FISHERY STATISTICS

Westward Region

Domestic groundfish catch statistics from state and federal waters of the Westward Region are compiled by NMFS and reported by the Pacific Coast Fisheries Information Network (PacFIN). The 1989 overall domestic catch, which includes both shore-based and at-sea processors and joint venture operations totalled 1.89 million mt and is summarized in Table 2. For the remainder of this report, the domestic catch will be defined as all domestic harvests exclusive of joint venture catches.

Groundfish harvests in the Westward Region accounted for most (98.5%) of the statewide harvest of groundfish (Figure 6). Further, groundfish catches in the Westward Region have increased tenfold from 1986 (134 thousand mt) to 1989 (1,342 thousand mt) (Table 3). Pollock catches-almost 1 million mt-in the Bering Sea were the major contributor to the record harvest in 1989. In addition to pollock and Pacific cod, sablefish, rockfish, and flatfish were important fisheries in the Westward Region. The majority of these fisheries (by tonnage) occurred in federal waters, but also occurred in adjacent state waters. Both shore-based and at-sea processing capacity expanded region-wide in 1989. Shore-based fleets were active year around in Kodiak, Port Bailey, Chignik, Sand Point, King Cove, Akutan and Dutch Harbor.

The ex-vessel value of groundfish in the Westward Region increased from an estimated \$226 million in 1988 to \$292.8 million in 1989. The value of pollock has increased fivefold since 1987 with an estimated value of \$140.6 million in 1989. In 1989, sablefish, halibut and Pacific cod landings were each worth about \$34 million. Landings of rockfish, flatfish and Atka mackerel totalled \$50 million, a substantial increase over 1987 when these species were valued at \$22 million (Table 4).

Concomitant with increasing catches, dramatic increases in fleet size were noted in all roundfish and flatfish fisheries, especially over the last three years (Table 5).

Kodiak

Over the past three years, the port of Kodiak has been one of the nation's most valuable seafood ports. In 1988, Kodiak ranked first in ex-vessel value (\$166.3 million), but fell to third in 1989 (\$100.2 million) (Table 6). Groundfish catches in 1989 ranked first (by landed weight), comprising 64.5% of all commercial species landed, including shellfish (Figure 7, Table 7). Groundfish ranked fourth in ex-vessel value (\$18.8 million) compared to other harvested species (Figure 8, Table 7). Within the groundfish group, 55% of the total value in 1989 was attributed to halibut (\$23 million) while sablefish, pollock and Pacific cod constituted the remaining 45% (\$17.7 million) (Figure 9, Table 8).

In 1989, 142.6 million pounds of groundfish (excluding halibut) was landed to ports in the Kodiak Borough which accounted for 69% of the total landed commercial catch, a substantial reduction from the previous year when 180.6 million pounds was landed (Table 9).

Several factors played a role in the overall reduction in landings in the Kodiak Borough. First, the TAC for pollock in 1989 was lowered to 72,000 mt and the season closed March 23 when all but the quota reserves had been harvested. Increased processing capacity of both shore-based and at-sea processors contributed to the acceleration of this fishery, but the presence of a dozen factory trawlers targeting roe-bearing pollock was the primary reason for the early closure of the fishery. The pollock fishery reopened from September 15 to October 1 by which time the quota reserves had been harvested by pelagic trawls. Second, the *Exxon Valdez* oil spill of March 24, 1989 engaged a significant percentage of shore-based fishing vessels in cleanup activities throughout the summer. Lastly, the 2,000 mt halibut bycatch cap for trawls was reached by August 30, and the use of bottom trawls was prohibited for the remainder of the year. Bottom trawl fisheries that targeted on Pacific cod and flatfish were curtailed before the TAC of these species had been reached. As a result, the value of the 1989 groundfish catch delivered to the port of Kodiak declined to \$18.8 million from a record high in 1988 of \$25 million (Figure 10).

In terms of tonnage, most deliveries to Kodiak processors in 1989 were from bottom and midwater trawls (86.5%) compared to longliners (13%) and other gear types (<.5%) (Figure 11). A total of 202 vessels made deliveries to Kodiak in 1989. Pacific cod and sablefish were taken by the largest fleets (110 and 135 vessels, respectively) because these species were caught by both longline and trawl vessels (Figure 12).

Dutch Harbor

The value of fish and shellfish landed to the port of Dutch Harbor has steadily increased over the past 3 years, from 128.2 million pounds valued at \$62.7 million in 1987 to 504.3 million pounds valued at \$107 million in 1989. In 1989, Dutch Harbor surpassed Kodiak as Alaska's most valuable port, ranking first in volume and second in value in the nation (Table 6).

Most of the increase in the 1989 DAP harvest in the Westward Region came from pollock catches in the Bering Sea. Both shore-based and at-sea processing capacity has increased to the extent that the U.S. fishing industry can now catch and process the entire allowable biological catch (ABC). In 1989 the quota for the largest single species fishery in the world, pollock, was large enough to permit a year round harvest.

ONBOARD OBSERVER PROGRAM

Although ADF&G has had a small scale observer program for about 11 years, attention has been drawn to this program over the past three years because of the overall paucity of at-sea data for management purposes during this time. As stated earlier, the groundfish fishery has had a profound impact on local communities within the region by providing a year around fishery. The overall benefit has been a more diversified fishing industry capable sustaining local economies between and during major crab, herring, halibut and salmon fisheries. However, little was known of the burgeoning groundfish fishery, especially regarding bycatch of prohibited species. NMFS and Sea Grant also manned a small observer program in 1989 (referred to as the NMFS program hereafter).

Since 1987, the ADF&G program has focused attention on halibut bycatch, particularly in the bottom trawl and longline fisheries in the Central Gulf of Alaska. The primary objective of the observer program was to determine the bycatch rate of non-target but otherwise fully utilized species (halibut, crab, herring, and salmon) that are caught by various gear types. Other goals of the observer program included: determination of the weight and species composition of the entire catch, determining the release condition of prohibited species (crab, halibut, salmon), collecting age structure information on target species and documentation of marine mammal interactions. In 1989, ADF&G observers also monitored catches, gear, seabirds, and surrounding waters for presence/absence of oil stemming from the *Exxon Valdez* spill as our observers were at sea just prior to and during the spill.

ADF&G observer coverage concentrated on shore-based vessels while NMFS focused their efforts on catcher-processors, with some overlap on shore-based vessels. In 1989 observers made 109 trips, 103 of which resulted in useful data (see below). This total includes 13 trips made by NMFS observers where data was voluntarily released to ADF&G.

Gear	Area	
	Gulf of Alaska	Bering Sea
Bottom Trawl	47	7
Midwater Trawl	27	3
Longline	18	0
Pots	1	0
Totals:	93	10

Kodiak

In the Kodiak area, ADF&G observers targeted both bottom and midwater trawl and longline fisheries while NMFS targeted the midwater trawl pollock fishery. Of the 93 trips made, 47 were taken on bottom trawlers, 27 on midwater trawlers, 18 on longline vessels and one trip on a pot vessel. Effort on trawl vessels was essentially unchanged from the previous year while effort on longline vessels was substantially increased (Table 10). Although the distribution of observer trips generally reflected the locations and times that the commercial fishery operated, the selection of vessels was opportunistic rather than random (Figures 13-16).

Trawl Observations

Because the ADF&G observer database is relatively small, the following discussion will focus on results from the cumulative data base (1987 through 1989). These data provided the basis for establishing halibut bycatch rates for the 1990 Gulf of Alaska groundfish fishery (NPFMC 1989). A total of 756 hauls were observed from 38 vessels with an overall halibut bycatch rate of 4.7% (Appendix Table A.1). Bottom trawl rates ranged from a low of 2.6% in the target deep flatfish fishery to a high of 5.5% in the target shallow flatfish fishery (Table 11). In the midwater trawl pollock fishery, a total of 161 hauls were observed from 23 vessels with a calculated halibut bycatch rate of .01% (Appendix Table A.25). Detailed summaries of halibut bycatch are presented in Appendix A.

Halibut bycatch in the nearshore bottom trawl fishery varies seasonally due to the onshore-offshore migration of halibut (Craig 1989). Calculation of half-year rates (January-June and July-December) suggests that halibut bycatch can be reduced significantly by fishing in the first half of the year versus the second. In the mixed fishery, the apparent bycatch rate for the first half of the year is 2.6% compared to 7.8% during the second half of the year. Disparity in half-year rates in the target Pacific cod fishery are greater: 2.0% in the first half versus 10.9% in the second half. Similar bycatch patterns are noted for other target fisheries, with greatest disparities noted in the 1989 data set (Table 12).

In the Central Gulf mixed bottom trawl fishery, the 1990 NMFS observed rate of 5.1% compares well to the ADF&G calculated rate of 4.7% (Table 13). The 1990 NMFS program represents observations from 40% of the bottom trawl catch (by weight), while data from the ADF&G program represented somewhere between 1-3%.

Longline and Pot Observations

Considerably less data has been collected in longline and pot fisheries in the Central Gulf. Growing concern over the

reliability of existing (i.e., joint venture) longline bycatch data prompted ADF&G to increase its efforts on this gear type in 1989. The following rates were adopted by the NPFMC as the upper limits of bycatch rate ranges for evaluation of the 1990 longline and pot fisheries. In the longline fisheries, much lower rates were adopted for preseason bycatch estimation (see below).

In the target sablefish fishery during the period 1987-1989, ADF&G observed 245 sets on 16 vessels and calculated a halibut bycatch rate of 38.3%. Fewer observations were made on the target Pacific cod fishery over the same time period (52 observed sets from 6 vessels), with an estimated halibut bycatch rate of 22%. Observations on pot vessels targeting Pacific cod has been low (58 sets on 3 vessels) with a calculated halibut bycatch rate of less than 0.4% (Table 11). Detailed summaries of halibut bycatch in longline and pot fisheries in the Central Gulf of Alaska are in Appendix A.

Preliminary results from the 1990 NMFS program indicate that the observed halibut bycatch rate in the target longline sablefish fishery is 32.8%, a rate which approaches, and perhaps validates, the ADF&G rate of 38.3%. Similar comparisons of halibut bycatch rates in the target Pacific cod fishery revealed substantial differences: the NMFS observed rate of 7.4% is fairly close to the published (pre-season) rate of 10%, but three times lower than the ADF&G rate of 22% (Table 13). It is important to note that overall coverage of gulf longline fisheries was scant, mostly due to the upward adjustment of the minimum vessel size class from 50' to 60. This change exempted many vessels from participating in the mandatory NMFS program.

Bycatch rates have also been calculated by gear type for other prohibited species (crab, salmon, and herring) and are summarized in Appendix A.

Dutch Harbor

Due to budget constraints, groundfish observer coverage has been negligible in the Dutch Harbor area. Since 1987, 29 observer trips have been merged into the data base from observations north of the Unimak Pass area in the Bering Sea (Figures 17 and 18). All trips were on either bottom trawl vessels (17 trips) or midwater trawl vessels (12 trips) (Table 10). Halibut bycatch rates ranged from 3.1% in the mixed bottom trawl fishery to 6.1% in the Pacific cod bottom trawl fishery. In the midwater trawl fishery, trace amounts of halibut were observed (Table 14). Calculated bycatch rates for other prohibited species (crab, salmon, and herring) are summarized in Appendix B.

FISH TICKET PROGRAM

The primary purpose of the groundfish fish ticket program is to record domestic groundfish landings from state and federal waters off Alaska. Prior to the advent of the new federal data gathering program in 1990, the program provided data essential to the in-season management of the resource. Additionally, these data form the historical domestic catch record which is archived at the Pacific States Marine Fisheries Commission in Portland, Oregon. The fish ticket data base serves many purposes for other state and federal needs. It is used by the Commercial Fisheries Entry Commission (CFEC) to determine the value of fisheries by gear type, for the establishment of appropriate fee schedules for interim-use permits. The Department of Revenue utilizes fish ticket data to evaluate tax compliance by fishermen and processors. The NPFMC has used fish tickets to evaluate new management strategies, in particular, the proposed Individual Fishing Quota (IFQ) system for the sablefish fishery.

In 1987, NMFS awarded funding to ADF&G to collect, edit and enter data from the fish tickets into the groundfish data base. The contract has been renewed yearly through 1989; in 1990, a three year contract was signed for continuation of this program through 1993.

A major contract requirement is the transmission of edited tickets on a weekly basis to NMFS in Juneau. The tickets are merged into a statewide database and managed by the ADF&G groundfish database manager in Juneau. Prior to transmission via computer modem, tickets are collected, edited and entered. Personnel in Kodiak, Sand Point, and Dutch Harbor collect the tickets personally or through mail or hand-delivery by processors. Tickets are edited for accuracy and completeness of content by groundfish staff in Kodiak with final editing and entry completed by the groundfish data entry clerk. Tickets processed by Kodiak staff are catalogued as 'Kodiak' batches regardless of fishery area except for areas of outside the Westward Region that are exclusively managed by the State (e.g., Prince William Sound sablefish, Southeastern sablefish and rockfish fisheries).

As the data base is continuously corrected and updated, preliminary in-season data releases are 2-3 weeks behind the actual fishery. The entire process has been streamlined considerably due to increased communications with industry, improvements in the fish ticket document, programming, and computer communication systems. In 1989, changes were made to ease completion of the fish ticket by industry and editing/entry of the tickets by ADF&G. The number of delivery condition codes increased as industry recorded a greater variety of primary and secondary fish products. Fishermen were also required to report the species (including prohibited species) and amounts of fish discarded at sea, and the number of

days they fished (Appendix C). A new statistical area chart encompassing nearshore waters of the Aleutian Islands and Alaska Peninsula areas was prepared to replace six larger scale charts previously distributed.

Other fish ticket related-work includes: 1) explanation of ticket contents to users, 2) preparation and dissemination of ADF&G statistical area charts, 3) coordination with NMFS and state enforcement personnel regarding ticket compliance issues, 4) forwarding halibut, salmon, crab and herring tickets to appropriate entities, and 5) numerous ad hoc analyses of groundfish data.

In 1989, Westward region groundfish staff collected, edited and entered 6,595 tickets (62% of the total processed statewide). Westward staff processed fewer tickets in 1989 but the number of ticket items increased from 28,630 in 1988 to 38,165 in 1989 (Table 15). A complete summary of fish ticket processing effort by region is given in Table 15.

Herring Bycatch Estimates

In 1988, Westward groundfish staff began tabulating herring discard reported on groundfish fish tickets in the Unimak Pass area of the Bering Sea. Analysis of 1989 data confirmed that herring bycatch in domestic trawl fisheries was increasing concomitant with declines in herring stocks of the eastern Bering Sea. Although the fish ticket data underestimated the extent of herring bycatch (non-reporting of discard on the ticket), it is estimated that DAP trawl fisheries incidentally caught approximately 2,000 mt of herring (Funk 1990). As a result of information presented at the April 1990 NPFMC meeting, the Council requested emergency action to protect herring during the summer migration by imposing a herring bycatch limit of 2.5% of the biomass.

The ability to perform other fish ticket-related analyses will improve in 1990 with an upgraded data entry program that will allow entering of non-groundfish species (reported as discard) along with groundfish species.

1989 CRAB AND GROUND FISH TRAWL SURVEY

Bottom trawl surveys have been conducted annually in nearshore waters of the Westward region, primarily to assess crab biomass and secondarily to monitor groundfish populations. Groundfish staff have helped collect and analyze data from these surveys for over a decade.

Groundfish Results

According to Jackson (1990), a total of 388 tows were sampled in the Kodiak and Alaska Peninsula areas in 1989 (Figure 19). Groundfish species were enumerated as were invertebrates. Length measurements were taken from more than 35,000 fish in the Kodiak area and 16,000 fish in the Alaska Peninsula area. By weight, arrowtooth flounder, flathead sole and pollock dominated catches in the Kodiak area (Table 16). In the Alaska Peninsula area pollock and yellowfin sole dominated catches, followed by flathead sole and arrowtooth flounder (Table 17).

Pollock Biomass Estimates

In response to a need for nearshore bottom trawl assessment data on the pollock biomass in the Gulf of Alaska, ADF&G has summarized and presented results from the annual trawl survey in the Kodiak area to NMFS and NPFMC. These data suggested that the demersal portion of the pollock biomass was probably underestimated by various trawl surveys (both hydroacoustic and bottom) conducted by NMFS. ADF&G surveys indicated a 68% increase in catch per mile between 1987 and 1988 and a 3% decline between 1988 and 1989 (Blackburn 1989).

REGIONAL MANAGEMENT PROGRAMS

In order to maintain an orderly groundfish fishery, ADF&G manages state waters in cooperation with the federal government. Federal opening/closure notices are matched by the state by issuing parallel emergency orders. A total of 19 emergency orders were issued by the Westward region in 1989 and are summarized in Table 18.

The Kodiak office also issues news releases to inform the public and industry of regulations, pending fishery openings and closures and other topics of importance to groundfish fisheries. News releases in 1989 dealt with: 1) trawl closures for bottom trawls in the Kodiak Area, 2) licenses, permits and registrations required prior to engaging in groundfish fisheries in 1989, 3) the new 1989 ADF&G fish ticket reporting requirements, and 4) recording herring bycatch.

Vessels that fish or transport raw fish through state waters are required to be validly registered in the region fished. In 1989, 277 vessels were registered (including 15 catcher-processors). Special permits are also required for fishermen using pot or sunken gill net gear in state waters of the Westward region. Thirty-five pot permits were issued, 28 of which permitted the use of modified king or Tanner crab pots. No sunken gill net permits were issued in 1989.

CONCLUSIONS AND RECOMMENDATIONS

The Westward Region groundfish observer program has met its primary objective of providing at-sea data wherever possible. These data have been used in a variety of forums to address bycatch concerns and related issues over the past three years (Appendix D). In light of recent, massive closures of groundfish fisheries in the Gulf of Alaska and Bering Sea due to prohibited species bycatch, the importance of the at-sea observer program cannot be overstated. As the federal at-sea and data gathering programs reach full implementation, sufficient raw data will be available to meet management needs for the first time. However, the sheer magnitude of the data base will probably preclude all but the most urgent in-season analytical work. Pioneer work remains in all aspects of the groundfish fishery, particularly in the relationship of prohibited species bycatch to target species catch (seasonality, depth stratification, etc.)

The groundfish fishery off Alaska's coast is the final frontier in marine fisheries and its exploitation affects virtually every other Alaskan fishery. As such, the State of Alaska will need to critically define new groundfish program goals that protect all marine species under State jurisdiction.

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Table 1. Catch and ex-vessel value of fish and shellfish in Alaskan waters in 1989. (Source: Savikko and Page, 1990).

Species	Catch (millions of pounds)	Value (millions of dollars)
Groundfish	4,160.0	456.6
Salmon	699.2	505.0
Shellfish	201.6	274.0
Herring	97.9	18.8
Halibut	55.5	76.1
Totals:	5,214.2	1,330.5

Table 2. 1989 Alaska domestic groundfish harvests, all gears and processing types (including joint venture landings).
(Source: PacFIN February 1990).

SPECIES	ALEUTIAN BERING SEA		ALEUT&BS	W. GULF	C. GULF	YAKUTAT	SOUTHEAST	E. GULF	GULF	TOTAL
ARROWTOOTH FLOUNDER	197.7	759.8	957.4	38.6	642.3	38.1	3.6	41.7	722.6	1680.2
UNSPECIFIED TURBOTS	-	2264.6	2264.6	-	-	-	-	-	-	2264.6
___TURBOTS	197.7	3024.4	3222.0	38.6	642.3	38.1	3.6	41.7	722.6	3944.8
ALASKA PLAICE	-	5.3	5.3	-	0.9	-	-	-	0.9	6.2
DOVER SOLE	-	0.3	0.3	-	1425.3	1.0	0.3	1.4	1426.7	1426.9
ENGLISH SOLE	-	-	-	-	5.6	-	1.0	1.0	6.7	6.7
GREENLAND TURBOT	4760.9	4061.1	8822.1	15.0	2.3	1.3	1.0	2.3	19.7	8841.8
REX SOLE	-	11.5	11.5	-	357.5	-	TR	TR	357.5	369.0
ROCK SOLE	40.8	44302.8	44343.6	7.5	1089.9	2.2	1.0	3.1	1100.5	45444.1
STARRY FLOUNDER	-	0.9	0.9	-	7.6	-	107.8	107.8	115.5	116.4
YELLOWFIN SOLE	0.4	152774.8	152775.2	-	2.3	-	0.1	0.1	2.3	152777.5
OTHER FLATFISH	-	71.2	71.2	-	412.2	-	1.4	1.4	413.6	484.8
UNSP. FLATFISH	53.0	20987.8	21040.8	80.5	892.2	18.9	9.0	27.9	1000.7	22041.5
___ALL FLATFISH	5052.8	225240.0	230292.9	141.6	4838.1	61.5	125.3	186.9	5166.5	235459.6
BLACK ROCKFISH	TR	-	TR	-	23.7	0.3	9.9	10.2	33.9	33.9
BOCACCI	-	-	-	-	-	0.1	0.5	0.6	0.6	0.6
CANARY ROCKFISH	-	-	-	-	0.1	TR	2.0	2.0	2.1	2.1
DARKBLOTCHED ROCKFISH	-	-	-	-	0.1	0.5	TR	0.5	0.6	0.6
DUSKY ROCKFISH	-	-	-	-	2.7	0.1	2.1	2.3	5.0	5.0
OTHER DEMERSAL RKFSH	-	-	-	-	0.4	0.1	4.5	4.5	4.9	4.9
OTHER SLOPE RKFSH	TR	2.8	2.8	7.9	150.0	21.0	32.9	53.9	211.9	214.7
GULLBACK ROCKFISH	-	-	-	-	TR	0.8	82.0	82.8	82.8	82.8
REDBANDED ROCKFISH	-	-	-	-	-	2.4	9.2	11.6	11.6	11.6
REDSTRIPE ROCKFISH	-	-	-	-	-	0.1	0.3	0.4	0.4	0.4
ROSETHORN ROCKFISH	-	-	-	-	-	0.3	2.7	3.0	3.0	3.0
ROUGHEYE ROCKFISH	-	-	-	-	28.0	40.8	62.7	103.5	131.5	131.5
SHORTRAKER ROCKFISH	-	-	-	-	0.1	0.4	4.0	4.4	4.5	4.5
SILVERGREY ROCKFISH	-	-	-	-	-	0.3	2.4	2.6	2.6	2.6
UNSP. DEMERSAL RKFSH	83.9	7.1	91.1	38.7	32.7	27.7	4.0	31.7	103.1	194.1
UNSP. PELAGIC RKFSH	7.9	-	7.9	103.4	829.2	657.5	8.3	665.7	1598.3	1606.3
UNSP. SLOPE RKFSH	16.4	-	16.4	3975.1	6848.0	4409.6	1360.5	5770.0	16593.2	16609.2
YELLOW EYE ROCKFISH	1.1	1.6	2.8	3.6	11.0	52.5	370.8	423.3	438.0	440.0
YELLOWMOUTH ROCKFISH	-	-	-	-	-	-	TR	TR	TR	TR
YELLOWTAIL ROCKFISH	-	-	-	-	0.1	1.0	0.4	1.4	1.4	1.4
PACIFIC OCEAN PERCH	0.9	204.6	205.5	2.4	13.2	3.6	1.1	4.7	20.3	225.3
UNSP. POP GROUP	3658.0	2695.6	6353.6	207.8	500.4	12.5	182.8	195.3	903.5	7257.3
THURNYHEADS	139.5	85.5	225.0	1049.9	1441.5	399.3	188.4	587.7	3079.1	3304.1
WIDOW ROCKFISH	-	-	-	-	-	-	TR	TR	TR	TR
UNSP. ROCKFISH	227.3	100.9	328.2	48.2	43.2	13.5	81.6	95.1	186.5	514.1
___ALL ROCKFISH	4135.1	3098.1	7233.3	5436.9	9924.4	5644.4	2413.0	3057.3	23418.7	30652.3
ATKA MACKEREL	14867.9	3126.1	17993.9	161.6	14.8	-	-	-	176.4	18170.2
LINGCOD	-	-	-	-	4.6	42.9	221.9	264.7	269.4	269.4
PACIFIC COD	4117.8	164800.8	168918.6	13829.6	27734.3	18.2	201.2	219.4	41783.2	210701.1
SABLEFISH	3151.6	1246.2	4397.8	4167.9	12189.6	7220.1	6264.1	13484.2	29841.7	34239.7
WALLEYE POLLOCK	16018.1	1276524.4	1292542.4	8701.0	57869.1	32.8	0.2	33.0	66603.1	1359238.1
UNSP. ROUND FISH	TR	-	TR	-	-	TR	TR	TR	TR	TR
___ALL ROUND FISH	38155.4	1445697.5	1483852.9	26860.1	97812.4	7313.9	6687.4	14001.3	138673.8	1622619.1
SPINY DOGFISH	-	-	-	-	-	-	5.0	5.0	5.0	5.0
UNSPECIFIED SQUID	5.7	300.4	306.1	-	1.3	-	-	-	1.3	307.1

THIS REPORT INCLUDES ONLY DATA FOR NORTH PACIFIC COUNCIL INPFC AREAS

TR => LANDED CATCH LESS THAN 0.05 METRIC TONS, OR METRIC TONS PER UNIT OF EFFORT LESS THAN 0.005

Table 2. (p. 2 of 2)

SPECIES	ALEUTIAN BERING SEA		ALEUT&BS	W. GULF	C. GULF	YAKUTAT	SOUTHEAST	E. GULF	GULF	TOTAL
UNSP. GROUND FISH	107.6	4992.7	5100.3	32.5	143.4	7.6	1.5	9.0	184.9	5285.2
-- MISC. GROUND FISH	113.4	5293.1	5406.4	32.5	144.7	7.6	6.5	14.1	191.3	5597.7
ALL GROUND FISH	47456.7	1679328.8	1726785.4	32471.1	112719.6	13027.4	9232.2	22259.6	167450.3	1894329.3

THIS REPORT INCLUDES ONLY DATA FOR NORTH PACIFIC COUNCIL INPFC AREAS

TR => LANDED CATCH LESS THAN 0.05 METRIC TONS, OR METRIC TONS PER UNIT OF EFFORT LESS THAN 0.005

Table 3. Annual domestic groundfish catches (mt) in the Central and Western Gulf of Alaska, Aleutian Is., and Bering Sea, by species group, 1980-1989. (Source: PacFIN 5/90).

Species	FMP Area	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Pacific Cod	Cent. Gulf	461	795	1910	4105	2148	2084	5442	26360	25061	27734
	West. Gulf	71	239	292	142	45	777	386	1944	5591	13830
	Aleutians	0	5259	5214	4000	391	460	10	2772	1866	4113
	Bering Sea	2401	8979	19586	37356	33856	39384	34825	42067	86135	120382
Pollock	Cent. Gulf	479	561	2186	117	330	6920	16104	35468	51226	57869
	West. Gulf	1	0	61	5	0	8458	713	3342	4592	8701
	Aleutians	0	58	48	71	12	45	745	249	2312	5450
	Bering Sea	114	177	88	880	6669	27961	51024	217963	531324	999338
Sablefish	Cent. Gulf	19	6	19	251	2756	3769	7774	10614	13409	12190
	West. Gulf	1	0	0	10	240	1955	2754	3546	3502	4168
	Aleutians	0	0	29	25	3	1315	2640	3779	3409	3152
	Bering Sea	2	2	148	26	1012	1959	2734	4012	3176	1243
Flounder	Cent. Gulf	13	52	18	61	240	254	942	1988	7223	4838
	West. Gulf	0	0	0	7	5	10	235	185	810	142
	Aleutians	0	0	0	0	0	22	1081	3535	1490	5053
	Bering Sea	44	0	5	3	8	25	4283	20424	44334	32225
Pacific Ocean Perch	Cent. Gulf	2	6	2	0	0	13	47	1434	6467	7540
	West. Gulf	0	0	0	7	116	631	254	1347	2586	4193
	Aleutians	0	0	0	0	2	93	0	726	741	3659
	Bering Sea	0	0	9	8	1240	716	378	1278	1496	2860
Rockfish	Cent. Gulf	31	62	10	16	43	216	535	705	1062	943
	West. Gulf	0	0	0	4	0	80	125	331	791	193
	Aleutians	0	0	0	0	0	66	25	51	131	336
	Bering Sea	0	0	3	0	38	49	57	250	214	101
Thornyheads	Cent. Gulf	0	0	0	0	1	22	278	971	1076	1442
	West. Gulf	0	0	0	0	8	6	86	506	791	1050
	Aleutians	0	0	0	0	0	17	21	91	147	140
	Bering Sea	0	0	0	0	7	6	103	217	187	86
Atka Mackerel	Cent. Gulf	0	0	0	0	0	0	0	0	0	15
	West. Gulf	0	0	0	0	31	0	0	0	735	162
	Aleutians	0	0	0	0	0	0	2	19	2080	14867
	Bering Sea	0	0	0	0	0	0	2	105	385	3070
Other	Cent. Gulf	364	128	50	44	1	47	93	43	292	145
	West. Gulf	0	0	0	1	0	169	40	28	40	33
	Aleutians	0	0	0	43	0	32	0	11	156	112
	Bering Sea	33	101	0	3264	0	466	418	919	893	492
Totals	Cent. Gulf	1369	1610	4195	4594	5519	13325	31215	77583	105816	112716
	West. Gulf	73	239	353	176	445	12086	4593	11229	19438	32472
	Aleutians	0	5317	5291	4139	408	2050	4524	11233	12332	36882
	Bering Sea	2594	9259	19839	41537	42830	70566	93824	287235	668144	1159797
Grand Totals		4036	16425	29678	50446	49202	98027	134156	387280	805730	1341867

Table 4. Ex-vessel value of groundfish caught in the Westward Region in 1987, 1988, and 1989 (\$ millions). Includes catcher-processor, mothership, and shore-based landings. (Source: ADF&G Westward Region fish ticket data base thru 1/90).

Species	1987	1988	1989
Pollock	27.4	70.5	140.6
Sablefish	29.4	49.7	33.1
Halibut	42.2	37.4	33.8
Pacific cod	21.3	30.8	34.8
Rockfish	13.7	17.8	14.2
Flounder	8.2	17.4	28.4
Atka Mackerel	0	2.3	7.8
Misc.	0.1	0.1	0.1
Totals:	142.3	226.0	292.8

Table 5. Number of groundfish vessels in the Westward Region by FMP species group, area, and year, 1980-1988.
(Source: NMFS and ADF&G data base, 5/90).

Species	FMP Area	1980	1981	1982	1983	1984	1985	1987	1988
Pacific Cod	Cent. Gulf	39	36	82	61	48	56	565	252
	West. Gulf	2	13	13	6	9	10	139	66
	Aleutians	0	13	10	9	5	6	30	3
	Bering Sea	17	22	49	40	50	46	109	73
Pollock	Cent. Gulf	15	14	16	10	13	17	145	104
	West. Gulf	1	1	5	2	0	9	10	9
	Aleutians	0	1	1	1	2	2	0	1
	Bering Sea	9	1	7	20	11	24	46	42
Sablefish	Cent. Gulf	7	4	12	27	60	140	335	346
	West. Gulf	2	0	0	2	15	67	79	47
	Aleutians	0	0	1	1	2	15	60	7
	Bering Sea	1	1	22	5	31	57	91	36
Flounder	Cent. Gulf	11	14	17	19	13	16	81	59
	West. Gulf	0	0	0	1	3	4	42	4
	Aleutians	0	0	0	0	1	3	59	0
	Bering Sea	7	0	2	2	12	16	96	27
Pacific Ocean Perch	Cent. Gulf	1	2	1	0	0	2	27	64
	West. Gulf	0	0	0	1	5	11	9	9
	Aleutians	0	0	0	0	1	8	15	1
	Bering Sea	0	0	4	1	16	13	24	11
Other Rockfish	Cent. Gulf	18	24	23	30	39	69	258	165
	West. Gulf	0	0	0	1	1	14	55	13
	Aleutians	0	0	0	0	0	7	52	2
	Bering Sea	0	2	1	0	8	15	60	10
Thornyheads	Cent. Gulf	0	0	0	0	4	30	68	184
	West. Gulf	0	0	0	0	3	11	56	34
	Aleutians	0	0	0	0	0	6	55	5
	Bering Sea	0	0	0	0	7	15	65	23
Atka Mackerel	Cent. Gulf	0	0	0	0	0	0	0	0
	West. Gulf	0	0	0	0	2	0	0	0
	Aleutians	0	0	0	0	0	0	0	0
	Bering Sea	0	0	0	0	0	0	0	4
Other	Cent. Gulf	58	75	75	51	11	37	40	7
	West. Gulf	0	0	0	2	0	3	2	0
	Aleutians	0	1	0	3	0	1	0	0
	Bering Sea	4	1	0	22	0	3	10	1
Totals*	Cent. Gulf	86	99	126	120	na	na	834	624
	West. Gulf	2	13	13	8			187	212
	Aleutians	0	13	10	9			71	78
	Bering Sea	17	23	49	40			174	175

*Represents numbers of unique vessels by FMP area by year.

Table 6. Catch (millions of pounds), ex-vessel value (millions of dollars), and national ranking of fish and shellfish landed to the ports of Kodiak and Dutch Harbor, 1987-1989. (Source: NMFS News Release).

Year	Kodiak			Dutch Harbor		
	Catch	Value		Catch	Value	
		\$	Rank		\$	Rank
1987	204.1	132.1	2	128.2	62.7	4
1988	304.6	166.3	1	377.3	100.9	3
1989	213.2	100.2	3	504.3	107.0	2

Table 7. Catch and ex-vessel value of commercial species (by group) landed to the port of Kodiak in 1989. (Source: Westward Region management staff, pers. comm.).

Species	Catch		Ex-Vessel Value	
	Pounds	Rank	Dollars	Rank
Groundfish	134,297,487	1	18,773,613	4
Salmon	36,991,100	2	22,919,200	2
Halibut	17,000,000	3	22,950,000	1
Tanner crab	10,838,887	4	22,650,395	3
Herring	4,880,515	5	2,064,656	7
Dungeness crab	3,077,937	6	3,385,730	6
Red King Crab	885,002	7	4,380,760	5
Misc. Shellfish (1)	288,676	8	1,075,623	8
Total:	208,259,604		98,199,977	

(1) Includes scallops, sea urchins, brown king crab, octopus, and Korean horsehair crab.

Table 8. Catch and ex-vessel value of groundfish species landed at Kodiak in 1989. (Source: Westward Region fish ticket data base, 1/90).

SPECIES	CATCH (lbs)	PRICE per lb	VALUE (\$)	VALUE (%)
HALIBUT (1)	17,000,000	1.35	22,950,000	55
SABLEFISH	7,348,121	0.83	6,098,940	15
POLLOCK	73,227,285	0.08	5,858,183	14
PACIFIC COD	44,225,430	0.13	5,749,306	14
THORNYHEAD ROCKFISH	577,397	0.51	294,472	1
DOVER SOLE	3,141,448	0.09	282,730	1
ROCK SOLE	1,992,903	0.11	219,219	*
REX SOLE	775,458	0.15	116,319	*
FLATHEAD SOLE	900,948	0.09	81,085	*
ARROWTOOTH FLOUNDER	1,173,916	0.04	46,957	*
UNSPECIFIED SLOPE ROCKFISH	264,683	0.16	42,349	*
BLACK ROCKFISH	32,816	0.16	5,251	*
PACIFIC OCEAN PERCH	25,059	0.14	3,508	*
MISC. FLATFISH	285,386	0.01	2,854	*
MISC. GROUND FISH (2)	278,882	0.01	2,789	*
STARRY FLOUNDER	16,783	0.07	1,175	*
MISC. ROCKFISH	5,896	0.16	943	*
ENGLISH SOLE	12,282	0.06	737	*
DUSKY ROCKFISH	5,208	0.10	521	*
YELLOWFIN SOLE	4,901	0.09	441	*
RED ROCKFISH	1,370	0.20	274	*
ROUGHEYE ROCKFISH	1,315	0.20	263	*
TOTALS:	151,297,487		41,758,317	

(1) Dressed weight

(2) Includes lingcod, sculpin, smelt, skates, and squid.

* = < 0.5

Table 9. Pounds of fish and shellfish delivered to and processed by shore-based plants in the Kodiak Borough in 1989 (preliminary) and 1990 (projected). Data pertain mostly to the Port of Kodiak although small catches from other ports in the borough are also included. Data compiled as of 3/15/90 by ADF&G Westward Region staff: L. Watson (groundfish), L. Malloy (finfish), and A. Spalinger (shellfish).

<u>Species</u>	1989 Preliminary Landings (lb)	1990 Projected Landings (lb)
<u>GROUNDFISH</u>		
Pollock	73,227,000	120,000,000
Pacific cod	44,225,000	70,000,000
Flatfish	8,304,000	10,000,000
Sablefish	7,348,000	7,500,000
<u>Other</u>	<u>9,498,000</u>	<u>10,000,000</u>
Sub-total	142,602,000	217,500,000
<u>HALIBUT</u> (dressed)	17,000,000	17,000,000
=====		
<u>SALMON</u>		
Kings	2,037	96,000
Reds	7,115,393	15,240,000
Coho	23,417	1,520,000
Pinks	19,770,940	43,623,000
<u>Chums</u>	<u>174,158</u>	<u>5,288,000</u>
Sub-total	27,085,945	65,767,000
<u>HERRING</u>		
Sac-Roe	4,498,000	4,750,000
<u>Food/Bait</u>	<u>698,000</u>	<u>800,000</u>
Sub-total	5,196,000	5,550,000
=====		
<u>CRAB</u>		
King	885,000	1,000,000
Tanner	11,700,000	3,200,000
<u>Dungeness</u>	<u>3,000,000</u>	<u>2,500,000</u>
Sub-total	15,585,000	6,700,000
<u>MISCELLANEOUS SHELLFISH</u>		
Scallops	242,000	150,000
Shrimp	0	0
Sea Urchins	45,000	50,000
Octopus	0	2,000
<u>Clams</u>	<u>0</u>	<u>0</u>
Sub-total	287,000	202,000
TOTAL POUNDS PROCESSED	207,755,945	312,719,000

Table 10. Number of observer trips in the ADF&G groundfish observer data base by gear and area, 1987-1989. Includes Sea Grant/NMFS observer trips voluntarily released to ADF&G. (Source: ADF&G observer data base, 5/90).

Gear	Central Gulf			Eastern Gulf			Bering Sea			All Areas 1987-1989
	1987	1988	1989	1987	1988	1989	1987	1988	1989	
Bottom Trawl	18	44	47	0	0	0	3	7	7	126
Midwater Trawl	8	22	27	0	0	1	4	5	3	70
Longline	6	7	18	0	2	2	0	0	0	35
Pots	3	1	1	0	0	0	0	0	0	5
Totals:	35	74	93	0	2	3	7	12	10	236

Table 11. Summary of halibut bycatch rates in domestic groundfish fisheries in the Central Gulf of Alaska as observed by the Alaska Department of Fish and Game by gear and target species, 1987-89. (Source: ADF&G Groundfish Observer database through 11-01-89)

Gear	Year (s)	Target Species	Bycatch Rate (%)	Appendix Number
Bottom Trawl	1987-1989	Mixed	4.7	A.1.
		Roundfish	4.9	A.2.
		Pollock only	5.0	A.3.
		Pacific cod only	4.9	A.4.
		Flatfish	4.0	A.5.
		Deep Flatfish	2.6	A.6.
		Shallow Flatfish	5.5	A.7.
	1987 only	Mixed	3.4	A.8.
		Roundfish	3.4	A.9.
		Pollock only	5.0	A.10.
		Pacific cod only	2.9	A.11.
		Flatfish	na	No data
	1988 only	Mixed	5.7	A.12.
		Roundfish	6.3	A.13.
		Pollock only	8.2	A.14.
		Pacific cod only	3.5	A.15.
		Flatfish	4.2	A.16.
	1989 only	Mixed	4.5	A.17.
		Roundfish	6.0	A.18.
		Pollock only	0.5	A.19.
		Pacific cod only	8.1	A.20.
		Flatfish	2.8	A.21.
Longline	1987-1989	Sablefish	38.3	A.22.
	1987-1989	Pacific cod	22.0	A.23.
Pot	1987-1988	Pacific cod	0.4	A.24.
Midwater Trawl	1987-1989	Pollock	.01	A.25.

Table 12. Summary of halibut bycatch rates in domestic groundfish fisheries in the Central Gulf of Alaska as observed by the Alaska Department of Fish and Game by gear and target species and by half year: January-June and July-December, 1987-1989. (Source: ADF&G Groundfish Observer database through 11-1-89).

	Year(s)	Target Species	Bycatch Rate (%)	
			Jan-Jun	July-Dec
Bottom Trawl	1987-89	Mixed	2.6	7.8
		Roundfish	2.5	10.0
		Pollock only	4.2	7.0
		Pacific cod only	2.0	10.9
		Flatfish	2.7	4.0
		Deep Flatfish	2.5	2.8
		Shallow Flatfish	*	4.9
	1987 only	Mixed	1.4	5.4
		Roundfish	1.4	5.4
		Pollock only	*	6.8
		Pacific cod only	0.3	5.2
	1988 only	Mixed	4.6	6.4
		Roundfish	4.6	6.6
		Pollock only	*	7.1
		Pacific cod only	2.8	*
		Flatfish	*	6.1
	1989 only	Mixed	2.2	13.5
		Roundfish	1.8	23.7
		Pollock only	0.5	*
		Pacific cod only	2.3	23.7
		Flatfish	2.7	*

*Rates not calculated due to confidentiality restrictions.

Table 13. Comparison of halibut bycatch rates in Gulf of Alaska trawl, longline, and pot groundfish fisheries in 1990.
(Source: ADF&G and NMFS domestic observer data bases).

Target Fishery/ Gear Type	ADF&G ¹ Rate	Published ² Rate	Observed ³ Rate
Mixed bottom trawl	4.7	2.7	5.1
Pollock midwater trawl	.01	.01	.06
Sablefish longline	38.3	8.0	30.6
Pacific cod longline	22.0	10.0	7.4
Pacific cod pot	0.4	0.4	na

1 Rate calculated from 1987-1987 ADF&G data base.

2 Rate implemented by the NPFMC for 1990 season.

3 Rate calculated from 1990 NMFS in-season data base.

Table 14. Summary of halibut bycatch rates in domestic groundfish fisheries in the Bering Sea as observed by the Alaska Department of Fish and Game by gear and target species, 1987-89. (Source: ADF&G Groundfish Observer database through 5/90).

Gear	Year (s)	Target Species	Bycatch Rate (%)	Appendix Number
Bottom Trawl	1987-1989	Mixed	3.1	B.1.
		Pacific cod only	6.1	B.2.
		Pollock only	*	
		Flatfish	*	
Midwater Trawl	1987-1989	Pollock	T	B.3.

* Rates not calculated due to confidentiality restrictions.

T = < .05

Table 15. Number of ADF&G groundfish fish tickets and items processed in 1987, 1988, and 1989 by region. (Source: NMFS Groundfish Information System, 5/90).

Region of Entry	1987				1988				1989			
	Tickets		Ticket Items		Tickets		Ticket Items		Tickets		Ticket Items	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Westward	7923	59.1	24137	45.4	7120	57	28630	50.4	6595	61.5	38165	61.4
Central	1675	12.5	7860	14.8	1444	11.5	8675	15.3	794	7.5	6772	10.9
Southeastern	3807	28.4	21142	39.8	3925	31.5	19444	34.3	3330	31	17220	27.7
Totals:	13405		53139		12489		56749		10719		62157	

Table 16. Relative abundance by weight of the 20 most encountered species of groundfish and invertebrates captured from the Westward Region bottom trawl survey in the Kodiak area in 1989. (Source: Jackson 1990).

<u>Species Name</u>	<u>% of Catch by Weight</u>
Arrowtooth flounder (<i>Atheresthes stomias</i>)	22.5
Flathead sole (<i>Hippoglossoides elassodom</i>)	21.7
Walleye pollock (<i>Theragra chalcogramma</i>)	20.4
Pacific cod (<i>Gadus macrocephalus</i>)	6.2
Yellowfin sole (<i>Limands aspera</i>)	4.7
Tanner crab (<i>Chionoecetes bairdi</i>)	3.7
Skates (big & longnose) (<i>Raja binoculata</i> & <i>Raja rhina</i>)	2.9
Butter sole (<i>Isopsetta isolepis</i>)	2.9
Rock sole (<i>Lepidopsetta bilineata</i>)	2.6
Pacific halibut (<i>Hippoglossus stenolepis</i>)	2.2
Dover sole (<i>Microstomus pacificus</i>)	1.6
Rex sole (<i>Glyptocephalus zachirus</i>)	1.3
Starry flounder (<i>Platichthys stellatus</i>)	.7
Great sculpin (<i>Myoxocephalus polyacanthocephalus</i>)	.7
Starfish (<i>Spp.</i>)	.6
Sablefish (<i>Anoplopoma fimbria</i>)	.4
Dungeness crab (<i>Cancer magistar</i>)	.3
Red king crab (<i>Paralithoides camtschatica</i>)	.3
Hermit crab (<i>Spp.</i>)	.3
Alaska plaice (<i>Pleuronectes quadrituberculatus</i>)	.3

Table 17. Relative abundance by weight of the 20 most encountered species of groundfish and invertebrates captured from the Westward Region bottom trawl survey in the Alaska Peninsula area in 1989. (Source: Jackson 1990).

<u>Species Name</u>	<u>% of Catch by Weight</u>
Walleye pollock (<i>Theragra chalcogramma</i>)	19.5
Yellowfin sole (<i>Limanda aspera</i>)	18.2
Flathead sole (<i>Hippoglossoides elassodom</i>)	13.8
Arrowtooth flounder (<i>Atheresthes stomias</i>)	10.5
Rock sole (<i>Lepidopsetta bilineata</i>)	5.8
Pacific cod (<i>Gadus macrocephalus</i>)	5.7
Starfish (<i>Spp.</i>)	4.7
Sea anemone (<i>Spp.</i>)	2.9
Pacific halibut (<i>Hippoglossus stenolepis</i>)	2.3
Tanner crab (<i>Chionoecetes bairdi</i>)	1.5
Sculpins (<i>Spp.</i>)	1.3
Skates (big and longnose) (<i>Raja binoculata</i> and <i>Raja rhina</i>)	.8
Starry flounder (<i>Platichthys stellatus</i>)	.8
Sea Urchin (<i>Strongylocentrotus droebachiensis</i>)	.5
Snails (<i>Spp.</i>)	.5
Dungeness crab (<i>Cancer magister</i>)	.4
Hermit crab (<i>Spp.</i>)	.4
Alaska plaice (<i>Pleuronectes quadrituberculatus</i>)	.3
Butter sole (<i>Isopsetta isolepis</i>)	.2
Shortfin eelpout (<i>Lycodes brevipes</i>)	.2

Table 18. Summary of Westward Region groundfish emergency orders issued in 1989.

Number	Issue	Expire	Subject
4-GF1-89	22Dec88	31Dec89	Pot special permit (Kodiak)
4-GF2-89	22Dec88	31Dec89	Pot special permit (Chignik)
4-GF3-89	22Dec88	31Dec89	Pot special permit (Aleu/Penin)
4-GF4-89	--none--		
4-GF5-89	23Mar89	31Dec89	Pollock closure (West/Cent.GOA)
4-GF6-89	2Jun89	31Dec89	Sable. longline closure (Cent.GOA)
4-GF7-89	2Jun89	31Dec89	Sable. bycatch only (Bering Sea)
4-GF8-89	7Jun89	"	Sable. trawl bycatch closure (CGOA)
4-GF9-89	6Jul89	"	Sable. prohib for longliners (CGOA)
4-GF10-89	10Jul89	"	Other Rockf. prohib-all gears(CGOA)
4-GF11-89	13Jul89	"	Sable. prohib for longliners (WGOA)
4-GF12-89	30Jul89	"	Sable. bycatch only-all gears (AI)
4-GF13-89	10Aug89	"	Sable. prohib for trawl (WGOA)
4-GF14-89	30Aug89	"	Bottom trawl prohibited (GOA)
4-GF15-89	15Sep89	"	Reopen pollock xcept btrawl(W&CGOA)
4-GF16-89	23Sep89	"	P.cod prohibited-all gears WGOA)
4-GF17-89	1Oct89	"	Pollock closed-all gears(W&CGOA)
4-GF18-89	17Oct89	"	Directed sablefish reopened (BSAI)
4-GF19-89	24Oct89	"	Greenland turbot prohibited (BSAI)
4-GF20-89	3Sep89	"	Yfin/Flat/Rsole bycatch only-all gears AND Poll/Pcod bycatch only- bottom trawl (BS-Zone 1)

 Note: This numbering system is an independent series
 (beginning at GF1) that does not need to be sequenced
 with other ADF&G area offices.

GOA-Gulf of Alaska
 W-Western
 C-Central
 BS-Bering Sea
 AI-Aleutian Islands

Distribution: L. Nicholson, W. Nippes, D. Owen, M. Ward,
 H. Savikko, D. Carlile, E. Krygier (12/11/89)

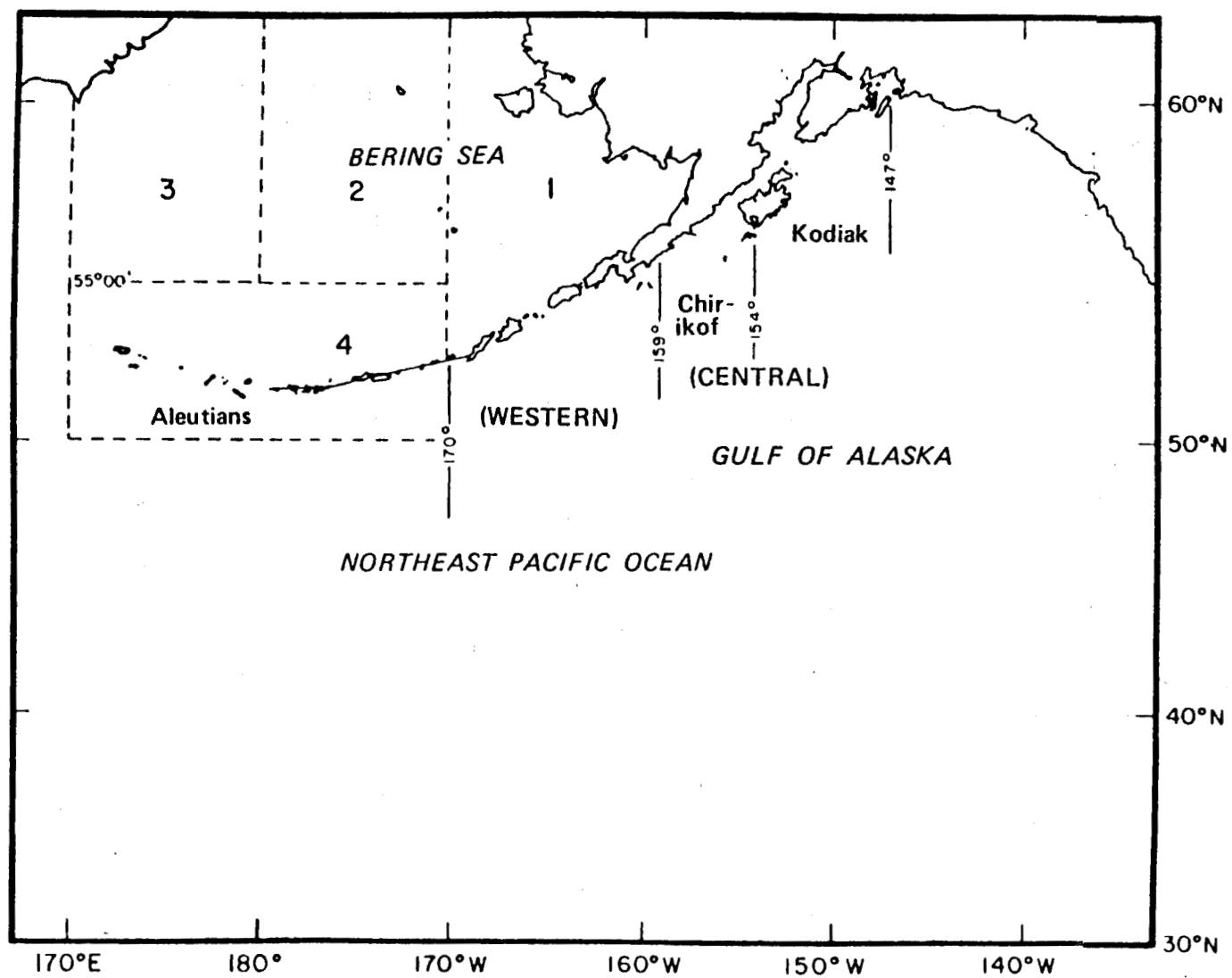


Figure 1. Westward Region groundfish management areas in the Gulf of Alaska, Bering Sea and Aleutian Islands.

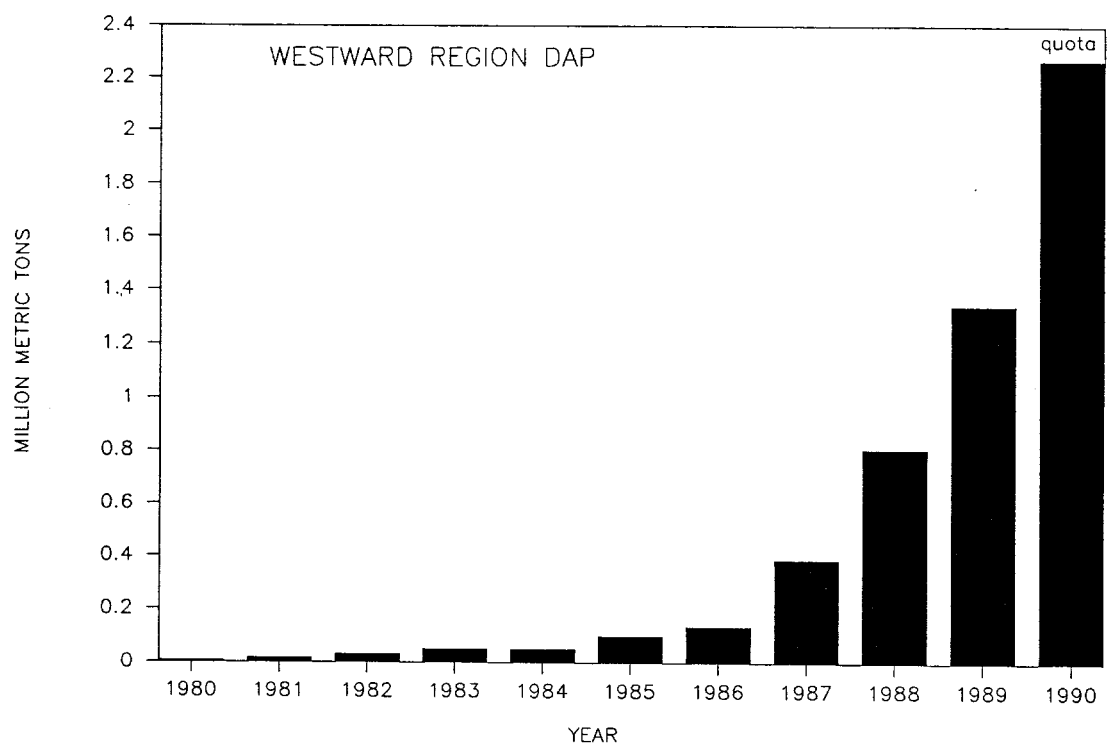


Figure 2. Yearly increases in the domestic groundfish harvest in the Westward Region, 1980-1990. (Source: NMFS and ADF&G fish ticket data base).

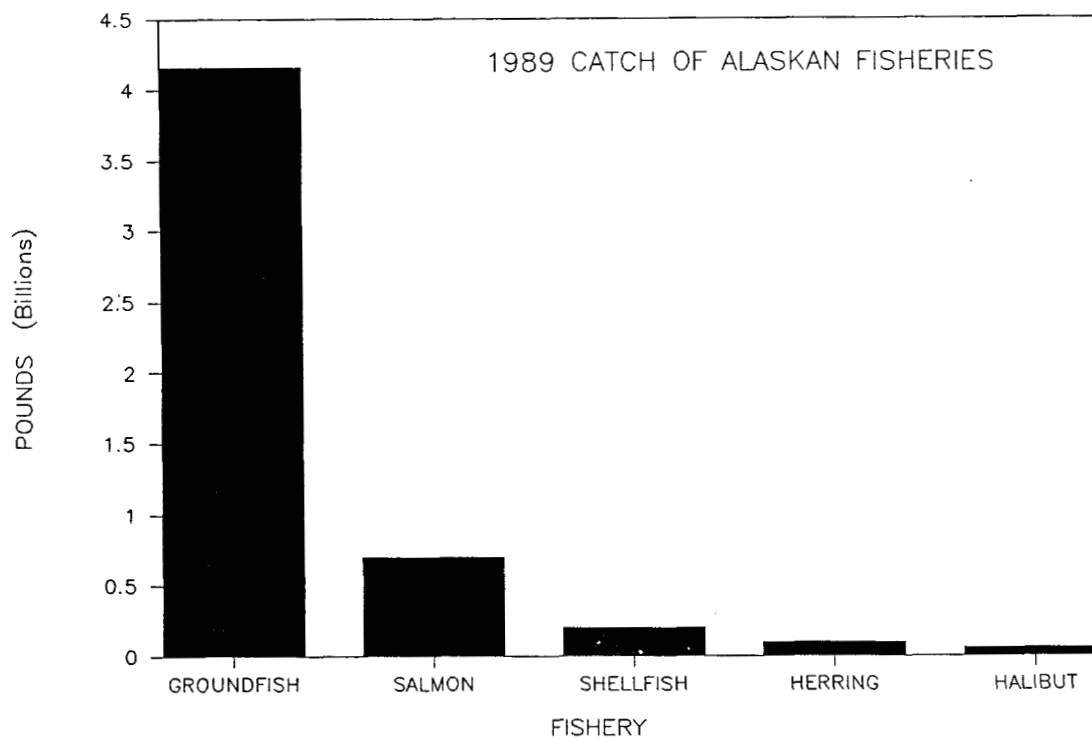


Figure 3. Catches of fish and shellfish in Alaskan waters in 1989.
(Source: NMFS and ADF&G fish ticket data base).

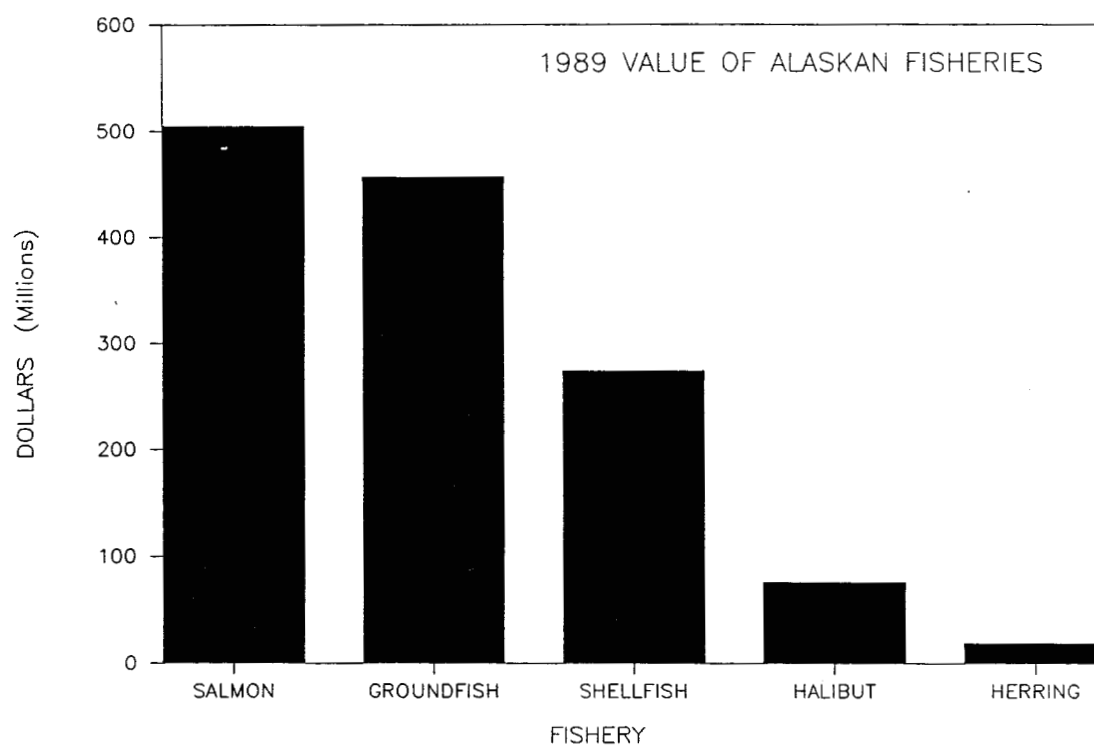


Figure 4. Ex-vessel value of fish and shellfish in Alaskan waters in 1989. (Source: Savikko and Page, 1990).

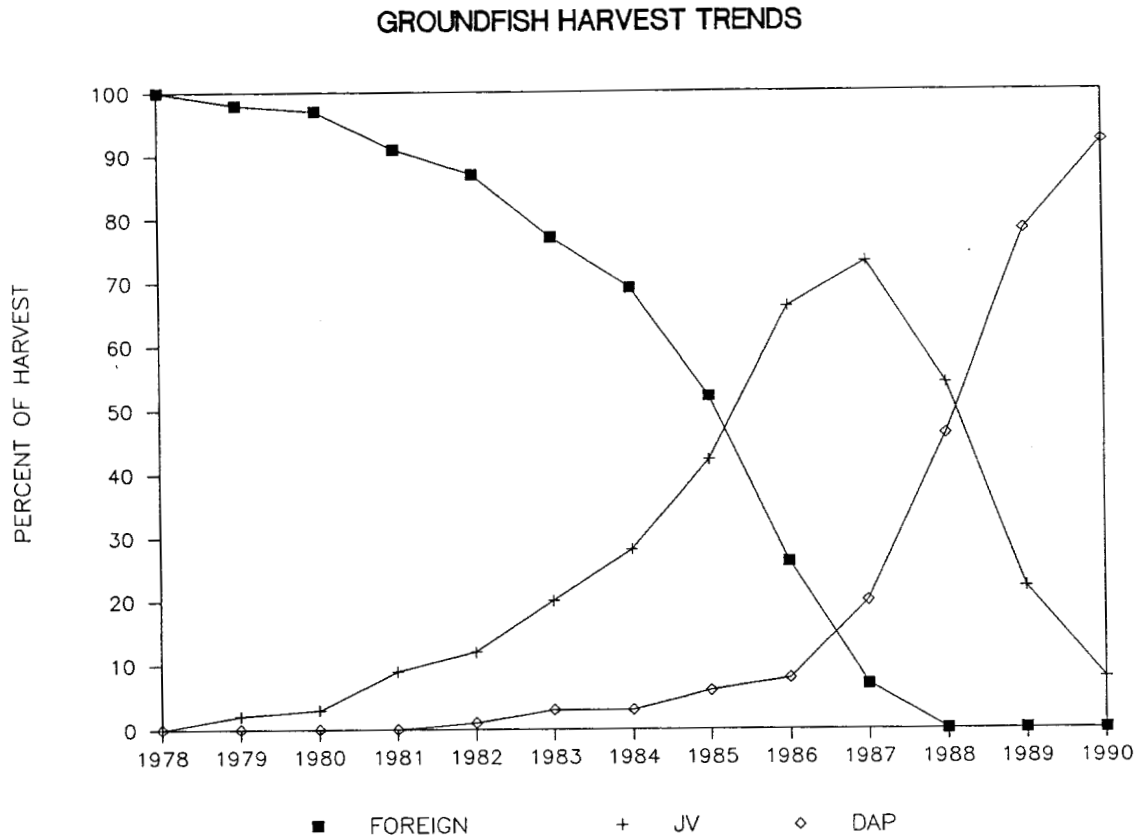


Figure 5. Annual changes in the harvest of Alaskan groundfish by foreign, joint venture (JV), and domestic (DAP) segments of the fishery. Data for 1990 are hypothetical. (Source: PacFIN reports, 1978-1989).

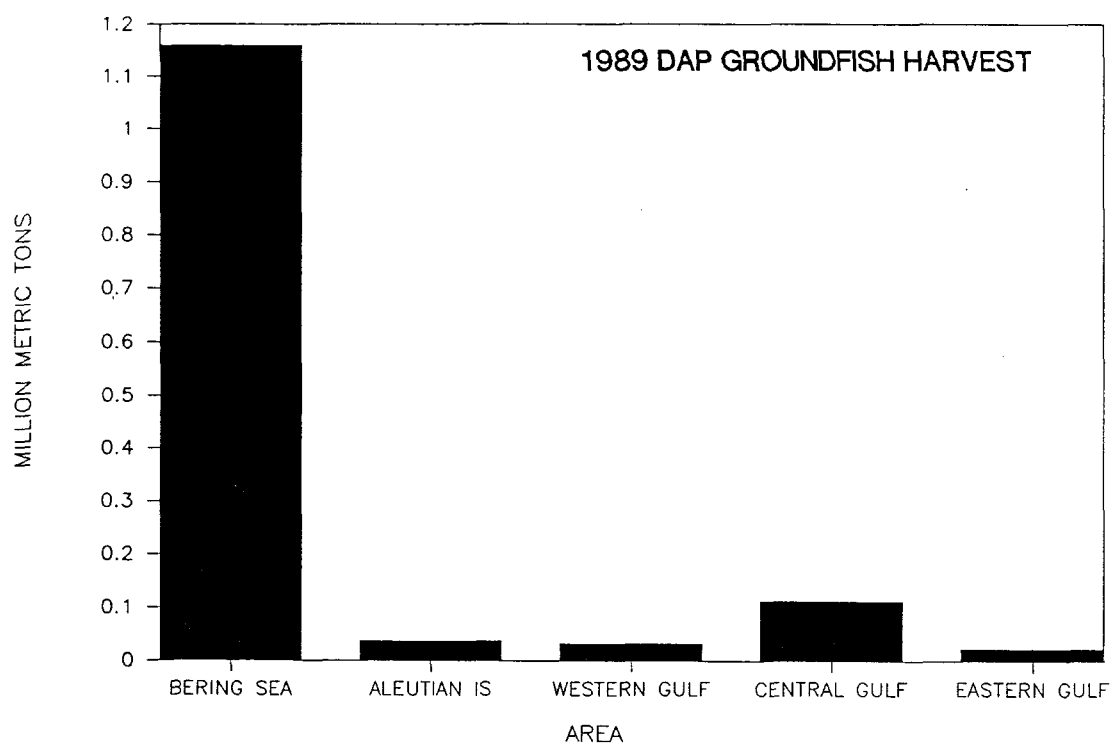


Figure 6. 1989 domestic groundfish landings by management area.
(Source: PacFIN, 2/90).

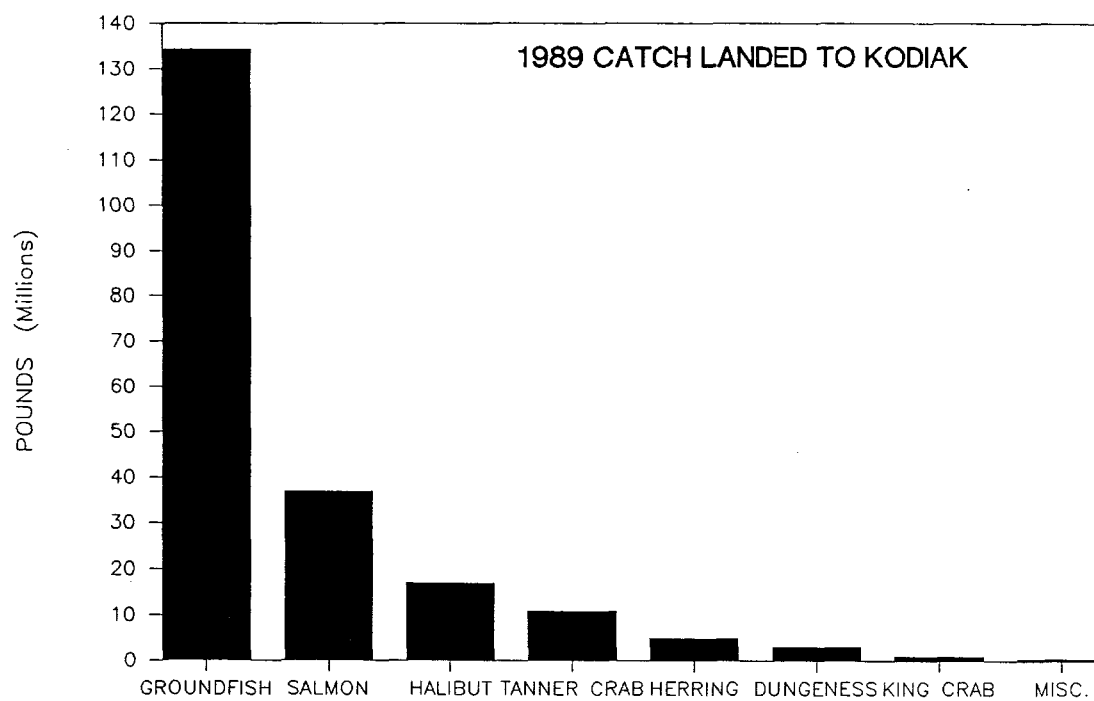


Figure 7. Catch of fish and shellfish landed to the port of Kodiak in 1989. (Source: Westward Region Mgmt. staff, pers. comm. 5/90).

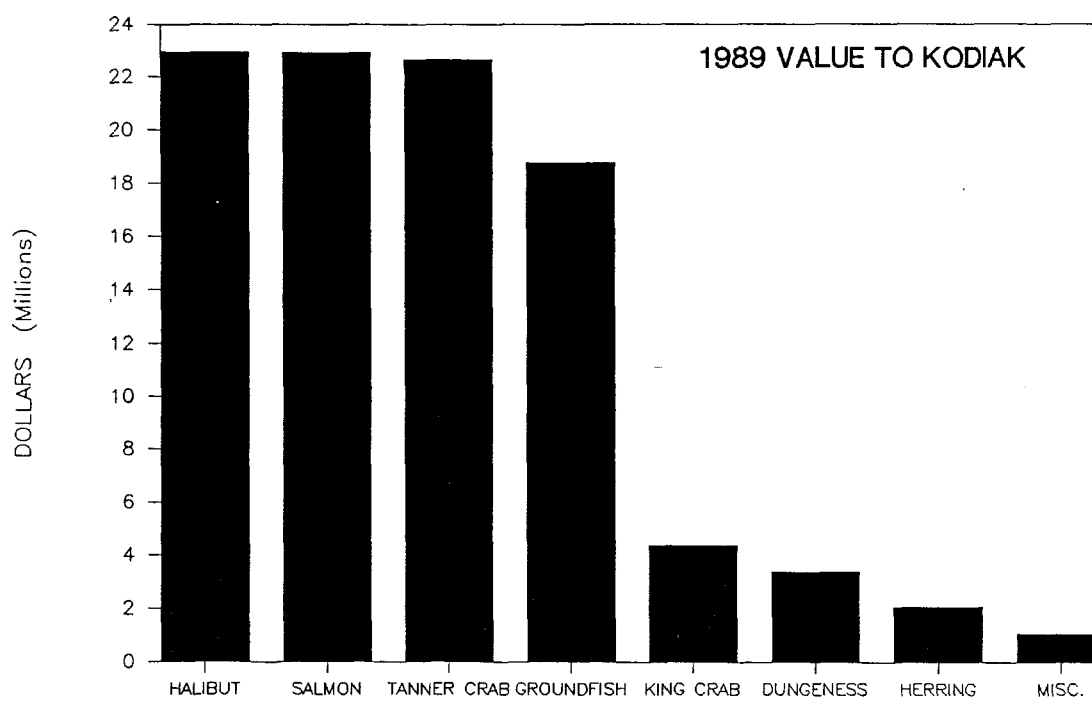


Figure 8. Value of fish and shellfish landed to the port of Kodiak in 1989. (Source: Westward Region Mgmt. staff, pers. comm. 5/90).

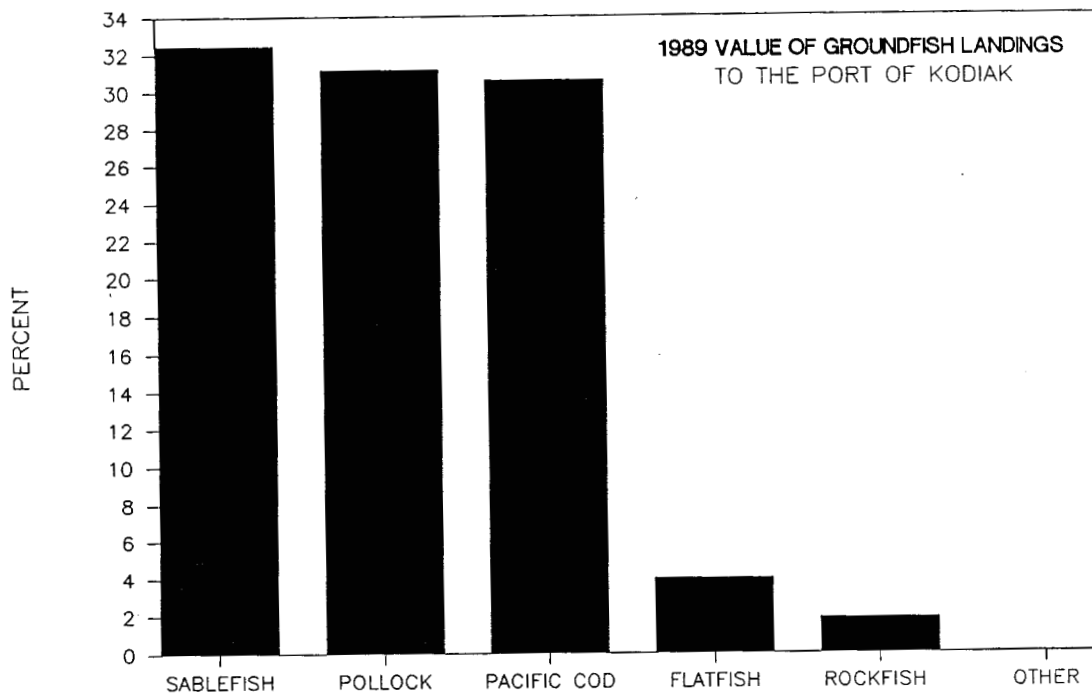


Figure 9. Percentage of total groundfish revenue at Kodiak (\$18.8 million in 1989) contributed by various groundfish species. (Source: ADF&G fish ticket data base, 5/90).

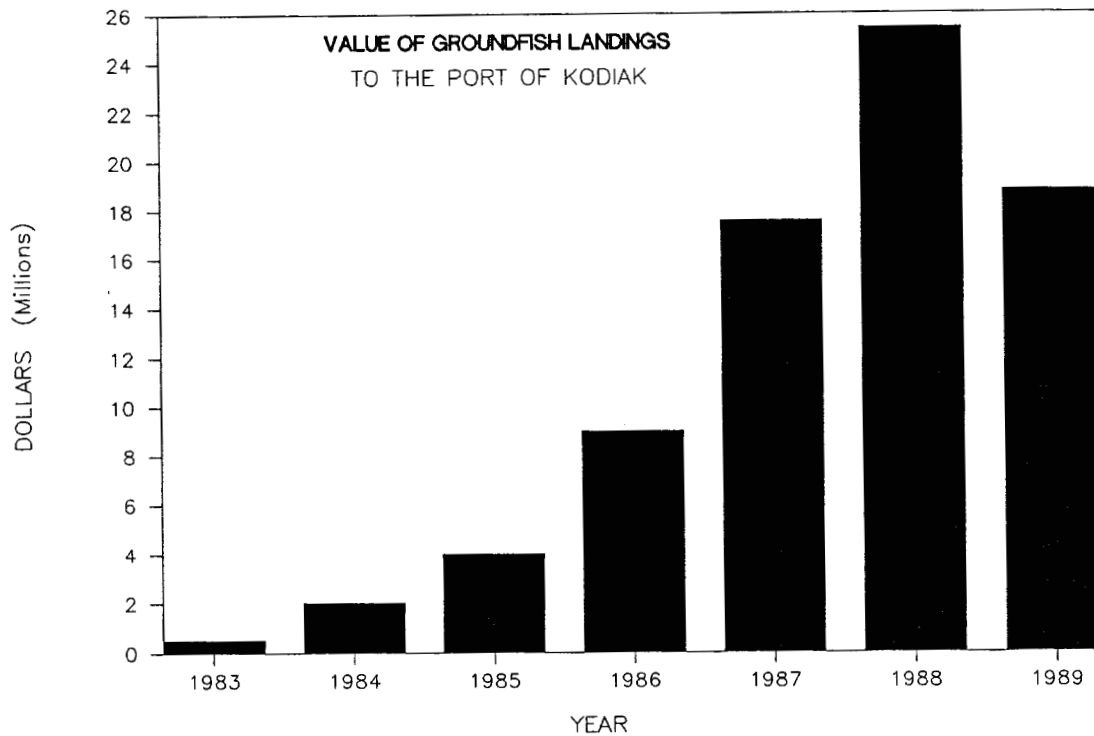


Figure 10. Ex-vessel value of groundfish landings at Kodiak by domestic shore-based vessels, 1983-1989. Halibut are not included. (Sources: ADF&G annual shellfish reports; NMFS and ADF&G fish ticket data base).

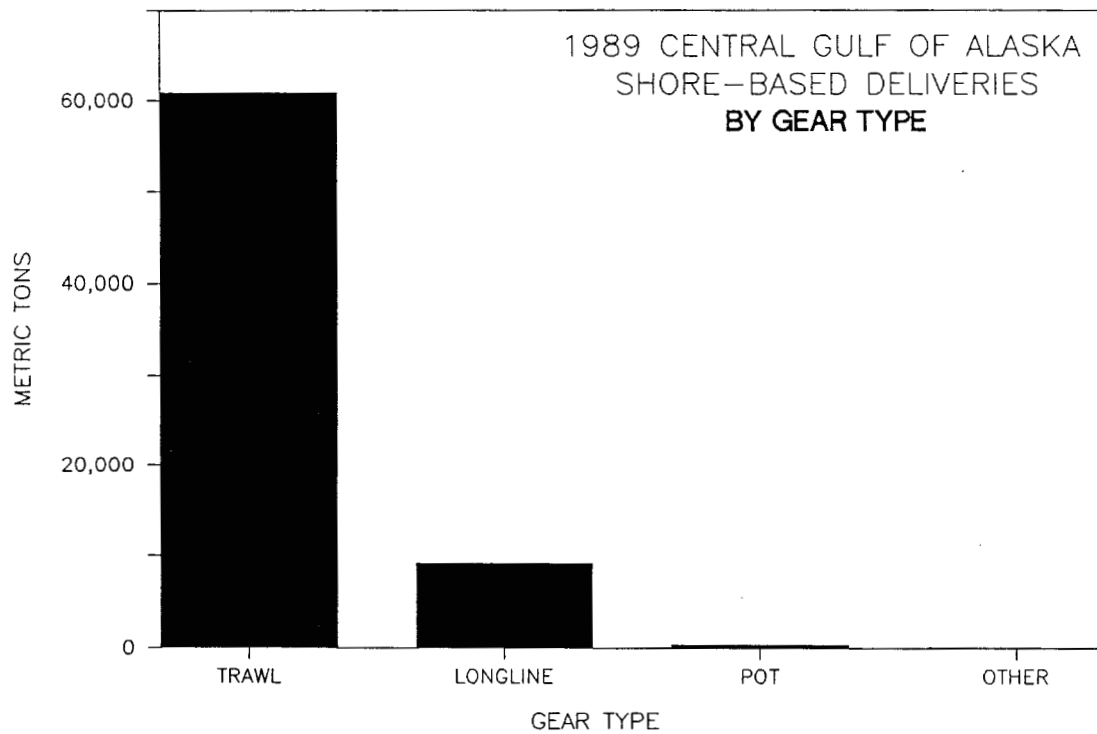


Figure 11. Groundfish landings to Kodiak by gear type in 1989.
(Source: ADF&G fish ticket data base, 5/90).

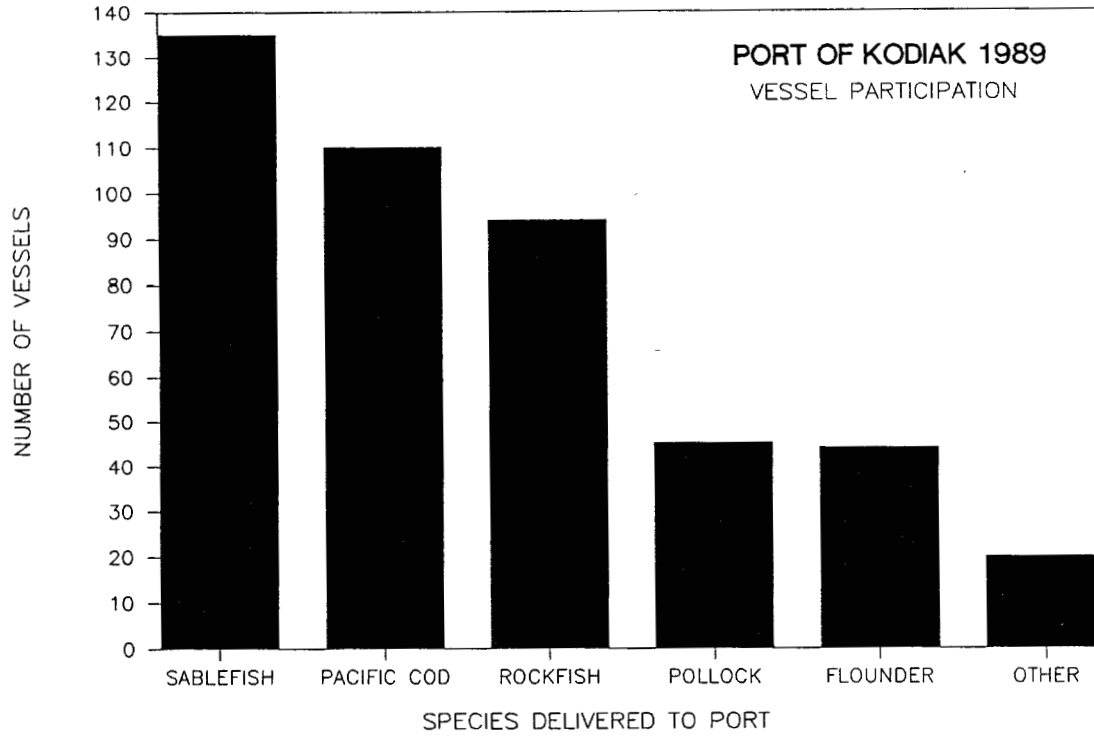


Figure 12. Number of domestic shore-based vessels that made deliveries of particular groundfish species to Kodiak in 1989. (Source: ADF&G fish ticket data base, 5/90).

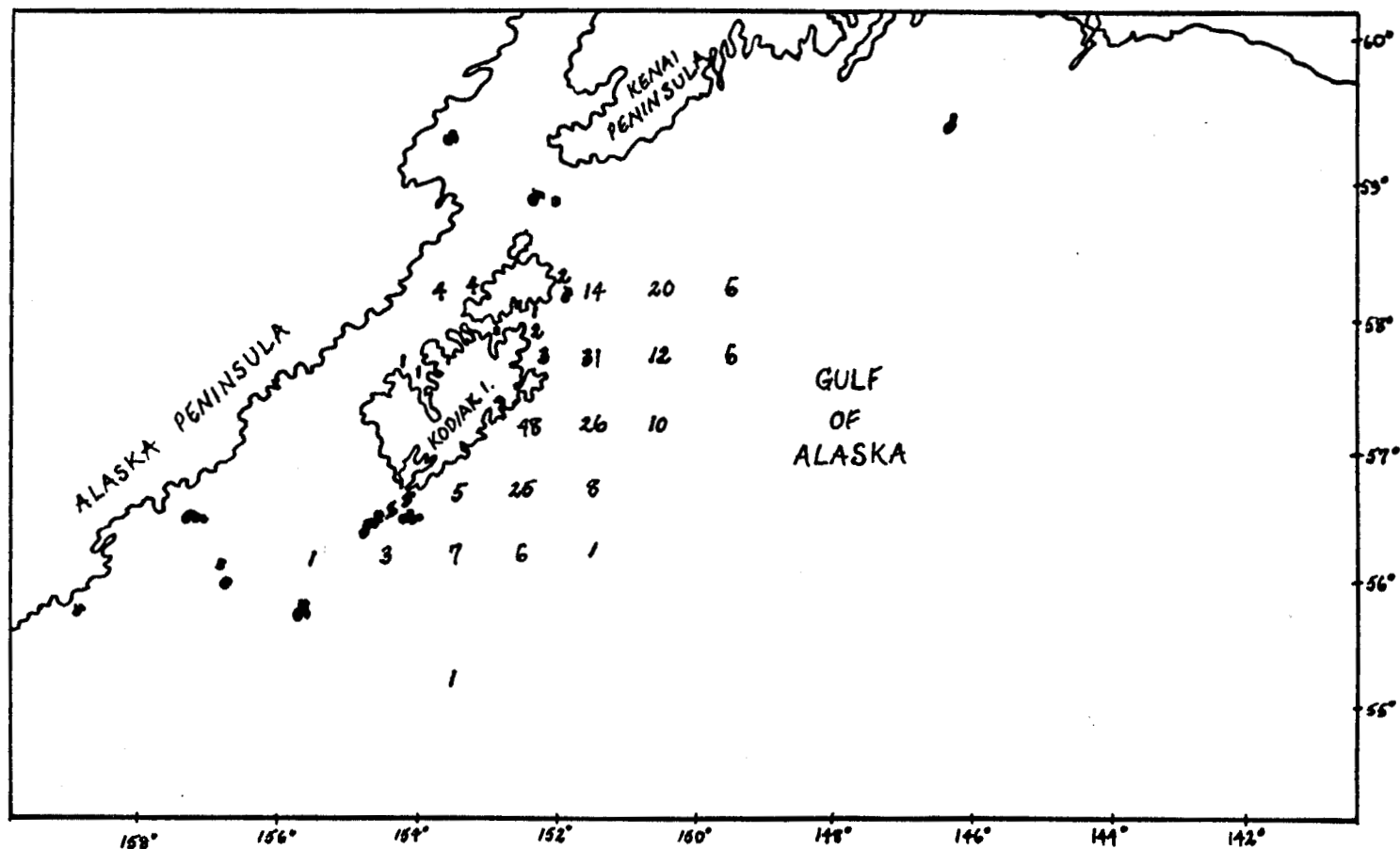
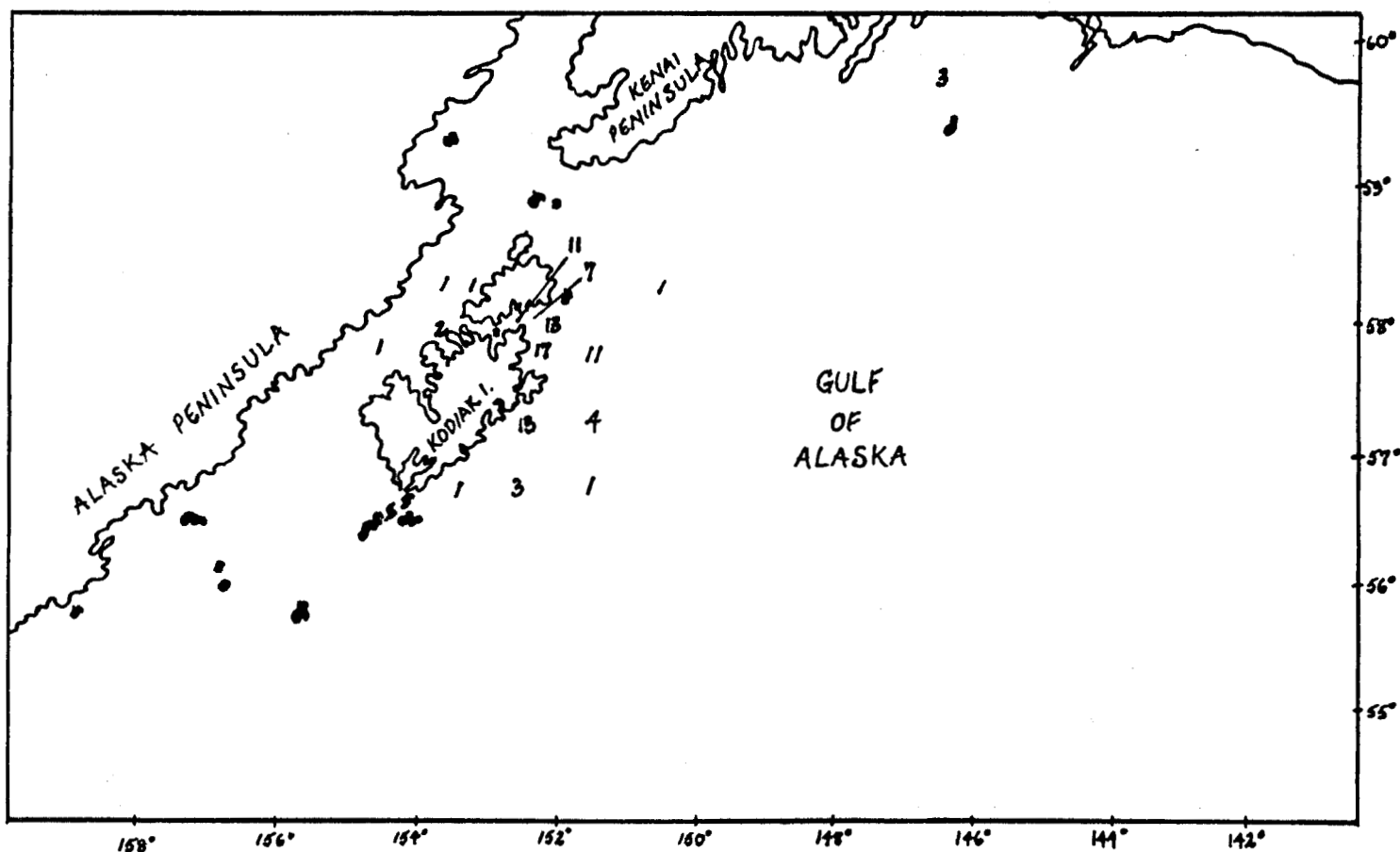


Figure 13. Location and number of ADF&G observer trips aboard domestic bottom trawlers in the Gulf of Alaska, 1987-1989. (Source: ADF&G observer data base thru 5/90).



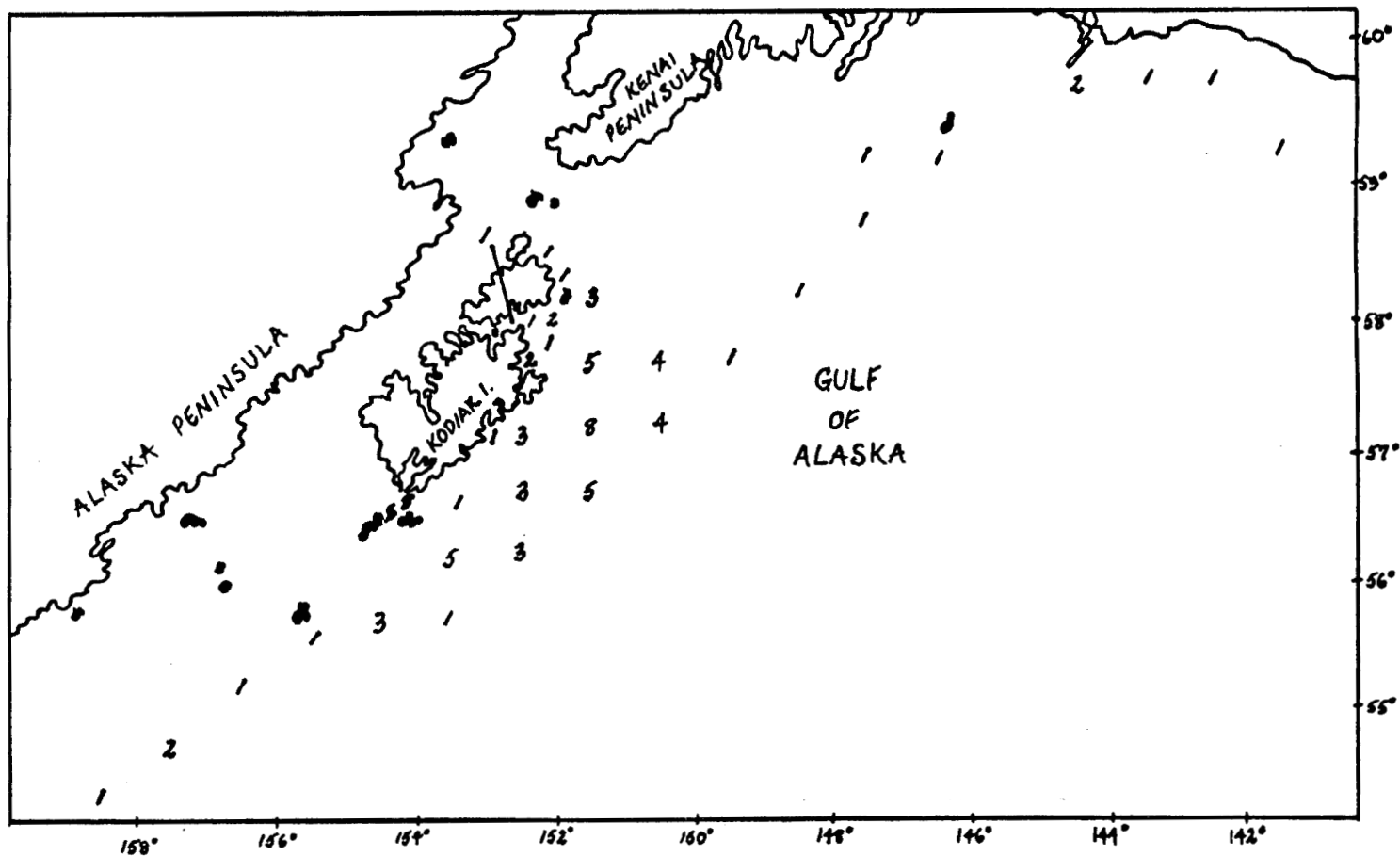


Figure 15. Location and number of ADF&G observer trips aboard domestic longline vessels in the Gulf of Alaska, 1987-1989. (Source: ADF&G observer data base thru 5/90).

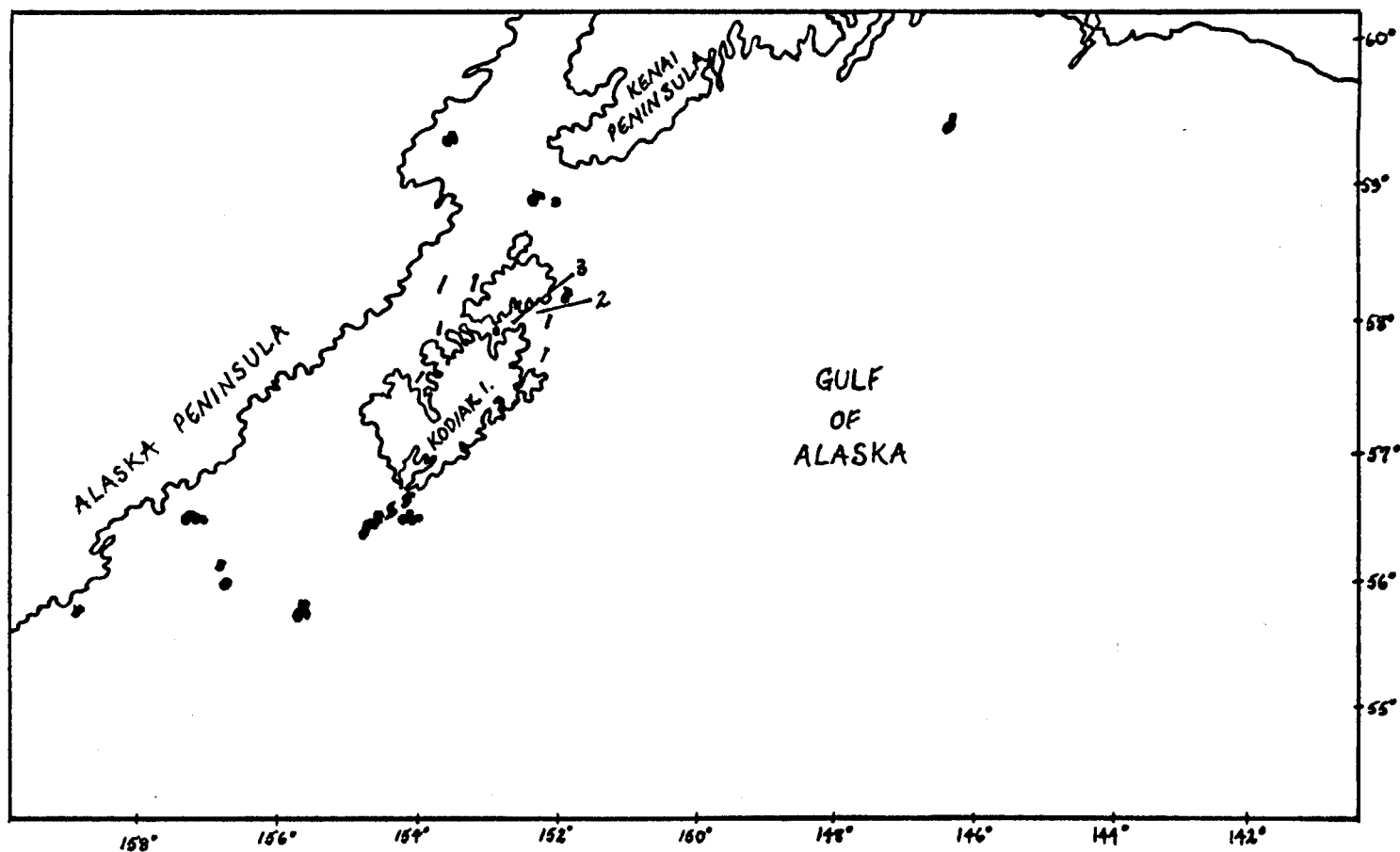


Figure 16. Location and number of ADF&G observer trips aboard domestic pot vessels in the Gulf of Alaska, 1987-1989. (Source: ADF&G observer data base thru 5/90).

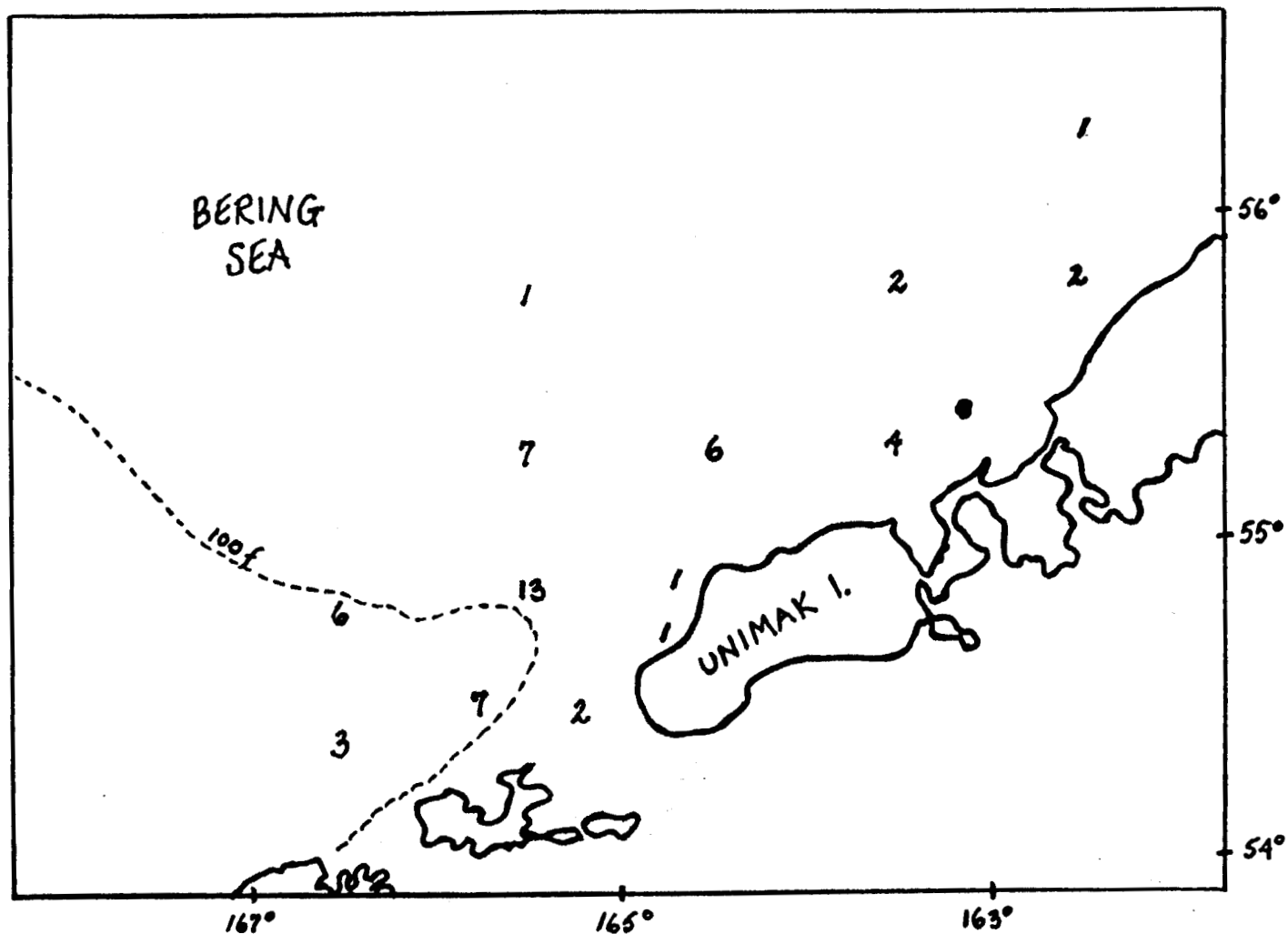


Figure 17. Location and number of ADF&G observer trips aboard domestic bottom trawlers in the Bering Sea, 1987-1989. (Source: ADF&G observer data base thru 5/90).

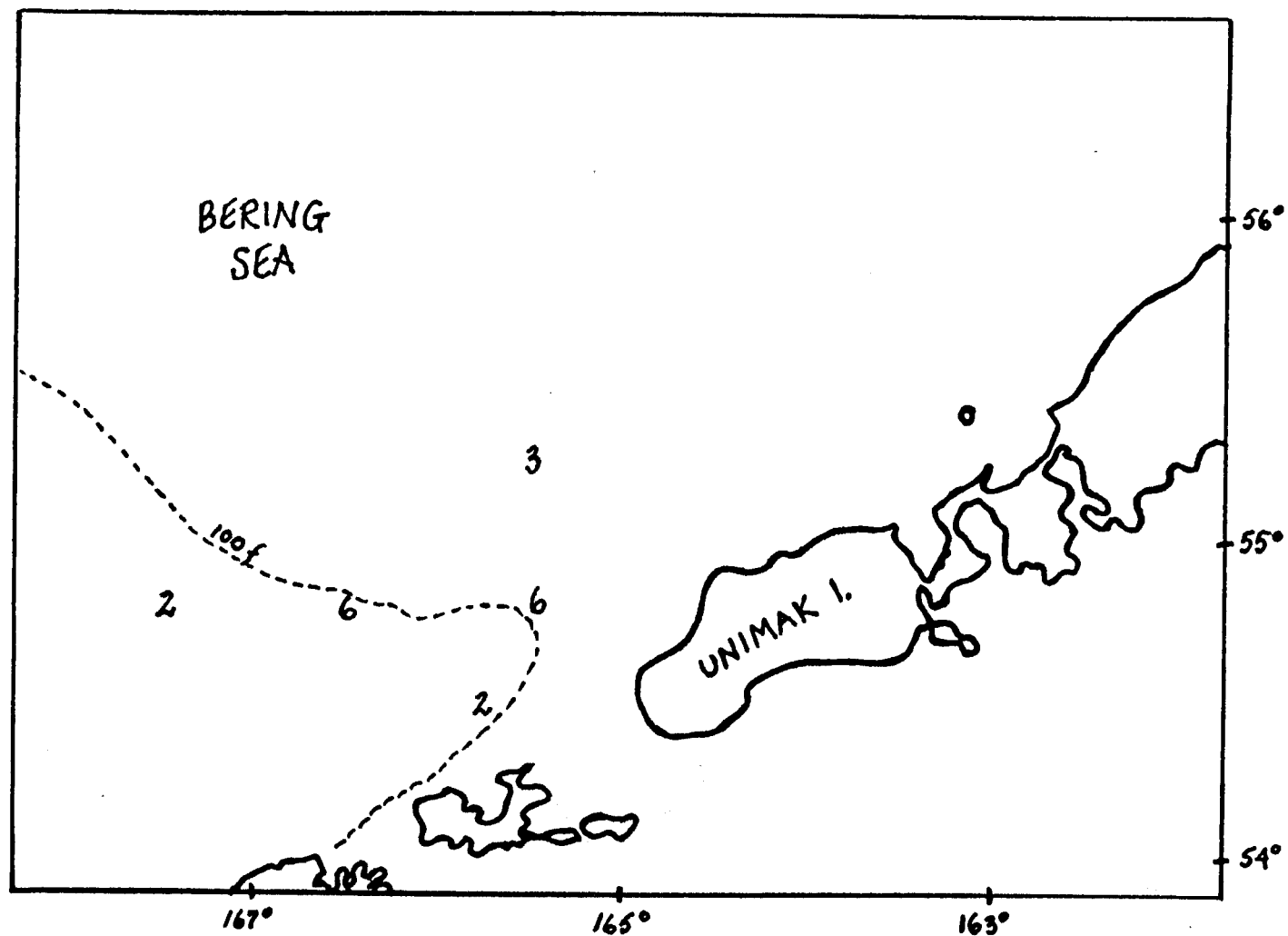


Figure 18. Location and number of ADF&G observer trips aboard domestic midwater trawlers in the Bering Sea, 1987-1989. (Source: ADF&G observer data base thru 5/90).

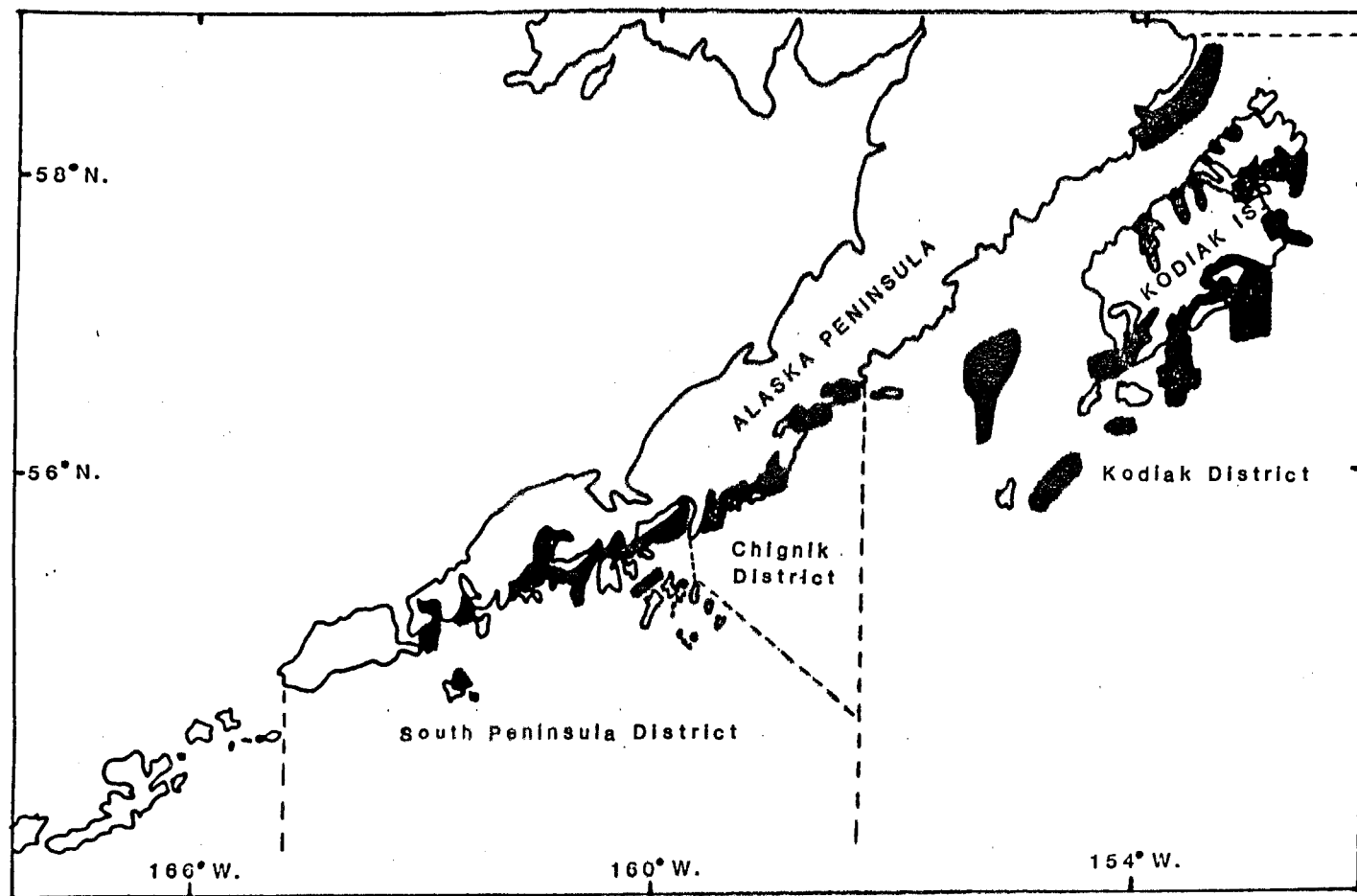


Figure 19. 1989 Westward Region crab trawl survey areas (Jackson 1990).

Appendix A.1 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.
Prepared (11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.3	11.7	46.6
Gear: Bottom Trawl	Tanner crab	0.1	3.8	1.6
Target Species: Mixed	R.king crab	T	T	T
	Salmon	0.1	0.3	0.7
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 38	Pacific cod	34.4		
Trips Observed: 104	Pollock	19.7		
Hauls/Sets Observed: 756	Flounder	33.0		
Total Landing: 3766.5 mt	Sablefish	4.2		
Stat. Areas Observed:	Rockfish	2.4		
495730 495800 505700	Other	2.8		
505730 505800 515600				
515630 515700 515730				
515800 515801 515802				
525600 525630 525702				
525730 525806 525807				
535602 535632 535733				
535734 535802 535803				
545602 555600				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 5255.02 mt.

MIX8789.ALL

Appendix A.2 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.7	14.6	49.4
Gear: Bottom Trawl	Tanner crab	0.2	5.3	2.2
Target Species: Roundfish	R.king crab	T	T	T
	Salmon	0.1	0.4	1.0
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 34	Pacific cod	51.6		
Trips Observed: 73	Pollock	26.0		
Hauls/Sets Observed: 479	Flounder	16.0		
Total Landing: 2405.3 mt	Sablefish	0.9		
Stat. Areas Observed:	Rockfish	0.4		
495800 505730 505800	Other	1.2		
515630 515700 515730				
515800 515801 515802				
525630 525702 525730				
535602 535632 535733				
535734 535802 555600				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 3232.03 mt.
RF8789.ALL

Appendix A.3 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.3	12.2	49.7
Gear: Bottom Trawl	Tanner crab	0.3	9.4	4.1
Target Species: Pollock	R.king crab	0.0	0.0	0.0
	Salmon	0.1	0.3	0.8
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 12	Pacific cod	19.6		
Trips Observed: 25	Pollock	60.4		
Hauls/Sets Observed: 128	Flounder	15.0		
Total Landing: 695.4 mt	Sablefish	0.5		
Stat. Areas Observed:	Rockfish	0.1		
495800 505730 505800	Other	0.8		
515700 515730 515802				
525630 525702 535632				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 1060.25 mt.

SPEC8789.ALL

Appendix A.4 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.9	15.6	49.4
Gear: Bottom Trawl	Tanner crab	0.1	3.6	1.4
Target Species: Pacific cod	R.king crab	T	T	T
	Salmon	0.1	0.4	1.2
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 30	Pacific cod	67.5		
Trips Observed: 53	Pollock	9.2		
Hauls/Sets Observed: 345	Flounder	16.5		
Total Landing: 1692.1 mt	Sablefish	1.1		
Stat. Areas Observed:	Rockfish	0.5		
505730 505800 515700	Other	1.2		
515730 515800 515801				
515802 525630 525702				
525730 535602 535632				
535733 535734 535802				
555600				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 2161.57 mt.
SPEC8789.ALL

Appendix A.5 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the the years 1987-1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	2.7	6.1	40.4
Gear: Bottom Trawl	Tanner crab	T	1.2	0.5
Target Species: Flatfish	R.king crab	T	T	T
	Salmon	T	0.1	0.1
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 11	Pacific cod	6.5		
Trips Observed: 44	Pollock	9.8		
Hauls/Sets Observed: 276	Flounder	60.3		
Total Landing: 1360.6 mt	Sablefish	9.6		
Stat. Areas Observed:	Rockfish	5.6		
495730 495800 505700	Other	5.4		
505730 505800 515600				
515630 515700 515730				
515802 525600 525630				
525702 525806 525807				
535602 535632 535803				
545602				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 2022.359 mt.
RF8789.ALL

Appendix A.6 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	1.7	2.7	26.3
Gear: Bottom Trawl	Tanner crab	T	0.1	T
Target Species: Deep	R.king crab	T	T	T
Flatfish	Salmon	T	T	0.1
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 7	Pacific cod	1.3		
Trips Observed: 29	Pollock	3.2		
Hauls/Sets Observed: 179	Flounder	64.3		
Total Landing: 850.2 mt	Sablefish	14.2		
Stat. Areas Observed:	Rockfish	8.5		
495730 495800 505700	Other	6.7		
505730 505800 515600				
515630 515700 515802				
525600 525630 525702				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 1294.51 mt.

SPEC8789.ALL

Appendix A.7 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	No./mt Kg/mt

	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.1	11.4	54.5
Gear: Bottom Trawl	Tanner crab	T	0.2	0.1
Target Species: Shallow	R.king crab	T	T	T
Flatfish	Salmon	T	0.1	0.4
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 7	Pacific cod	12.0		
Trips Observed: 14	Pollock	12.7		
Hauls/Sets Observed: 60	Flounder	66.8		
Total Landing: 284.8 mt	Sablefish	1.5		
Stat. Areas Observed:	Rockfish	0.5		
505800 515700 515730	Other	3.5		
515802 525702 525807				
535602 535632 545602				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 504.3401 mt.

SPEC8789.ALL

Appendix A.8 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1987.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	----
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	2.8	6.0	33.9
Gear: Bottom Trawl	Tanner crab	0.3	7.3	3.5
Target Species: Mixed	R.king crab	T	T	T
	Salmon	0.1	0.3	0.8
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987	Commercial			
Vessels Observed: 10	Pacific cod	51.9		
Trips Observed: 17	Pollock	26.7		
Hauls/Sets Observed: 137	Flounder	15.1		
Total Landing: 762.3 mt	Sablefish	0.8		
Stat. Areas Observed:	Rockfish	0.8		
505800 515630 515700	Other	1.6		
515730 515802 525630				
525702 535632				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 933.11 mt.

MIX87.ALL

Appendix A.9 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1987.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	2.8	6.0	33.9
Gear: Bottom Trawl	Tanner crab	0.3	7.3	3.5
Target Species: Roundfish	R.king crab	T	T	T
	Salmon	0.1	0.3	0.8
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987	Commercial			
Vessels Observed: 10	Pacific cod	51.9		
Trips Observed: 17	Pollock	26.7		
Hauls/Sets Observed: 137	Flounder	15.1		
Total Landing: 762.3 mt	Sablefish	0.8		
Stat. Areas Observed:	Rockfish	0.8		
505800 515630 515700	Other	1.6		
515730 515802 525630				
525702 535632				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 933.11 mt.

1987rfff

Appendix A.10 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1987.
(Prepared 11-01-87)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.1	10.9	49.7
Gear: Bottom Trawl	Tanner crab	0.9	30.4	14.8
Target Species: Pollock	R.king crab	0.0	0.0	0.0
	Salmon	T	0.1	0.3
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan 87 - 31 Dec 1987	Commercial			
Vessels Observed: 5	Pacific cod	25.6		
Trips Observed: 7	Pollock	52.3		
Hauls/Sets Observed: 50	Flounder	17.0		
Total Landing: 156.2 mt	Sablefish	T		
Stat. Areas Observed:	Rockfish	0.4		
525630 525702 535632	Other	0.7		

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 250.25 mt.

POLL87.ALL

Appendix A.11 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1987.
(Prepared 11-01-87)

		1	2	
Catch Details	Species	Catch (%)	---Bycatch---	No./mt Kg/mt

	Prohibited			
Area: Eastside Kodiak Is	Halibut	2.6	4.6	29.4
Gear: Bottom Trawl	Tanner crab	T	1.0	0.4
Target Species: Pacific cod	R.king crab	T	T	T
	Salmon	0.1	0.4	1.0
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1987	Commercial			
Vessels Observed: 9	Pacific cod	62.3		
Trips Observed: 14	Pollock	17.6		
Hauls/Sets Observed: 81	Flounder	14.4		
Total Landing: 588.3 mt	Sablefish	1.0		
Stat. Areas Observed:	Rockfish	0.7		
505800 515700 515730	Other	1.2		
515802 525630 525702				
535632				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 672.65 mt.

1987pcpl

Appendix A.12 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1988.
(Prepared 11-01-88)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	4.0	13.9	57.0
Gear: Bottom Trawl	Tanner crab	0.1	4.3	1.7
Target Species: Mixed	R.king crab	T	T	T
	Salmon	0.1	0.4	0.9
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1988	Commercial			
Vessels Observed: 18	Pacific cod	30.1		
Trips Observed: 43	Pollock	22.7		
Hauls/Sets Observed: 294	Flounder	32.0		
Total Landing: 1309.4 mt	Sablefish	5.9		
Stat. Areas Observed:	Rockfish	2.6		
495730 495800 505700	Other	2.4		
505730 505800 515630				
515700 515730 515802				
525600 525630 525702				
525806 525807 535602				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 1862.05 mt.

MIX88.ALL

Appendix A.13 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1988.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	4.7	17.1	62.9
Gear: Bottom Trawl	Tanner crab	0.2	6.1	2.4
Target Species: Roundfish	R.king crab	0.0	0.0	0.0
	Salmon	0.1	0.5	1.1
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1988	Commercial			
Vessels Observed: 17	Pacific cod	43.8		
Trips Observed: 33	Pollock	30.7		
Hauls/Sets Observed: 200	Flounder	17.2		
Total Landing: 904.9 mt	Sablefish	2.0		
Stat. Areas Observed:	Rockfish	0.2		
495800 505730 505800	Other	1.1		
515700 515730 515802				
525630 525702 525806				
525807 535602				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 1212.44 mt.

RF1988.ALL

Appendix A.14 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1988.
(Prepared 11-01-88)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	4.8	20.4	82.2
Gear: Bottom Trawl	Tanner crab	0.1	3.8	1.1
Target Species: Pollock	R.king crab	0.0	0.0	0.0
	Salmon	0.1	0.5	1.5
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1988	Commercial			
Vessels Observed: 8	Pacific cod	21.3		
Trips Observed: 11	Pollock	51.6		
Hauls/Sets Observed: 67	Flounder	19.9		
Total Landing: 313.0 mt	Sablefish	1.0		
Stat. Areas Observed:	Rockfish	T		
495800 505730 505800	Other	1.1		
515700 515730 515802				
525630 525702				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 531.2 mt.

POLL88.ALL

Appendix A.15 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1988.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	No./mt Kg/mt

	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.0	15.8	35.3
Gear: Bottom Trawl	Tanner crab	0.2	7.7	2.8
Target Species: Pacific cod	R.king crab	0.0	0.0	0.0
	Salmon	0.1	0.6	1.2
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1988	Commercial			
Vessels Observed: 11	Pacific cod	72.5		
Trips Observed: 17	Pollock	7.5		
Hauls/Sets Observed: 109	Flounder	12.3		
Total Landing: 472.4 mt	Sablefish	3.0		
Stat. Areas Observed:	Rockfish	0.4		
505730 505800 515700	Other	0.9		
515730 515802 525630				
525702 535602				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 550.6201 mt.

POLL88.ALL

Appendix A.16 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1988.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	2.6	6.3	41.8
Gear: Bottom Trawl	Tanner crab	T	0.2	0.1
Target Species: Flatfish	R.king crab	T	T	T
	Salmon	T	0.1	0.2
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1988	Commercial			
Vessels Observed: 5	Pacific cod	4.5		
Trips Observed: 19	Pollock	8.1		
Hauls/Sets Observed: 94	Flounder	59.9		
Total Landing: 404.5 mt	Sablefish	13.1		
Stat. Areas Observed:	Rockfish	7.1		
495730 495800 505700	Other	4.7		
505730 505800 515630				
515700 515730 515802				
525600 525630 525702				
525807				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 649.61 mt.

RF1988.ALL

Appendix A.17 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	3.1	13.1	45.0
Gear: Bottom Trawl	Tanner crab	T	1.6	0.7
Target Species: Mixed	R.king crab	T	T	T
	Salmon	T	0.2	0.6
Incidental Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1989	Commercial			
Vessels Observed: 22	Pacific cod	31.3		
Trips Observed: 44	Pollock	14.7		
Hauls/Sets Observed: 318	Flounder	40.4		
Total Landing: 1717.5 mt	Sablefish	4.1		
Stat. Areas Observed:	Rockfish	2.8		
495730 495800 505700	Other	3.5		
505730 505800 515600				
515630 515700 515730				
515800 515801 515802				
525600 525630 525702				
525730 535602 535632				
545602 555600				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 2473.68 mt.
MIXED.ALL

Appendix A.18 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year of 1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	4.3	20.2	60.3
Gear: Bottom Trawl	Tanner crab	0.1	2.9	1.1
Target Species: Roundfish	R.king crab	0.0	0.0	0.0
	Salmon	0.1	0.3	1.0
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1989	Commercial			
Vessels Observed: 18	Pacific cod	55.3		
Trips Observed: 28	Pollock	22.4		
Hauls/Sets Observed: 160	Flounder	16.6		
Total Landing: 880.2 mt	Sablefish	T		
Stat. Areas Observed:	Rockfish	0.3		
505730 505800 515700	Other	1.0		
515730 515800 515801				
515802 525630 525702				
525730 535602 535632				
555600				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 1233.19 mt.

RF89.ALL

Appendix A.19 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year 1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	0.4	1.8	4.8
Gear: Bottom Trawl	Tanner crab	0.1	2.7	0.8
Target Species: Pollock	R.king crab	0.0	0.0	0.0
	Salmon	T	T	0.1
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1989	Commercial			
Vessels Observed: 3	Pacific cod	10.9		
Trips Observed: 7	Pollock	84.4		
Hauls/Sets Observed: 11	Flounder	4.1		
Total Landing: 226.1 mt	Sablefish	0.0		
Stat. Areas Observed:	Rockfish	T		
515700 515730 525702	Other	0.1		

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 278.8 mt.
SPEC89.ALL

Appendix A.20 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during 1989. (Prepared 11-8-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	5.5	27.2	81.2
Gear: Bottom Trawl	Tanner crab	0.1	3.0	1.2
Target Species: Pacific cod	R.king crab	0.0	0.0	0.0
Inclusive Dates:	Salmon	0.1	0.4	1.3
1 Jan - 31 Dec 1989	Herring	0.0	0.0	0.0
	Commercial			
Vessels Observed: 16	Pacific cod	68.1		
Trips Observed: 21	Pollock	4.2		
Hauls/Sets Observed: 147	Flounder	20.3		
Total Landing: 635.5 mt	Sablefish	T		
Stat. Areas Observed:	Rockfish	0.3		
505730 505800 515700	Other	1.3		
515730 515800 515801				
515802 525630 525702				
525730 535602 535632				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 935.5699 mt.
1989pcod.nov

Appendix A.21 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the year of 1989.
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	No./mt Kg/mt

	Prohibited			
Area: Eastside Kodiak Is	Halibut	1.9	4.9	28.0
Gear: Bottom Trawl	Tanner crab	T	0.3	0.2
Target Species: Flatfish	R.king crab	T	T	T
	Salmon	T	T	0.1
Inclusive Dates:	Herring	0.0	0.0	0.0
1 Jan - 31 Dec 1989	Commercial			
Vessels Observed: 9	Pacific cod	6.7		
Trips Observed: 22	Pollock	7.3		
Hauls/Sets Observed: 157	Flounder	64.1		
Total Landing: 836.7 mt	Sablefish	8.5		
Stat. Areas Observed:	Rockfish	5.4		
495730 495800 505700	Other	6.1		
505730 505800 515600				
515630 515700 515730				
515802 525600 525630				
525702 535602 535632				
545602				

-
1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 1239.86 mt.

RF89.ALL

Appendix A.22 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years (1987-1989).
(Prepared 11-01-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Gulf of Alaska	Halibut	5.7	33.3	383.1
Gear: Longline	Tanner crab	T	T	T
Target Species: Sablefish	R.king crab	0.0	0.0	0.0
	Salmon	0.0	0.0	0.0
Inclusive Dates:	Herring	0.0	0.0	0.0
Sablefish Seasons 1987-89	Commercial			
Vessels Observed: 16	Pacific cod	0.7		
Trips Observed: 18	Pollock	T		
Hauls/Sets Observed: 245	Flounder	4.8		
Total Landing: 265.8 mt	Sablefish	58.0		
Stat. Areas Observed:	Rockfish	16.5		
415900 425931 435931	Other	14.4		
445931 465901 475830				
475900 485800 495730				
505700 505730 515630				
515700 525600 525630				
525702 535602 545530				
555532 565000 575430				
585400 595400				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 365.13 mt.
SAB8789.ALL

Appendix A.23 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game during the years 1987-1989.

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Central Gulf Alaska	Halibut	7.6	34.1	219.8
Gear: Longline	Tanner crab	T	0.1	0.1
Target Species: Pacific cod	R.king crab	0.0	0.0	0.0
	Salmon	0.0	0.0	0.0
Inclusive Dates:	Herring	0.0	0.0	0.0
March 87 - June 89	Commercial			
Vessels Observed: 6	Pacific cod	81.5		
Trips Observed: 7	Pollock	1.7		
Hauls/Sets Observed: 52	Flounder	1.0		
Total Landing: 108.3 mt	Sablefish	T		
Stat. Areas Observed:	Rockfish	0.2		
505730 515700 515730	Other	8.0		
515801 515802 525630				
525702 525732 525733				
525803 525805 525807				
535602 535632 535706				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 167.45 mt.

8789sfsh

Appendix A.24 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game, 1987-1988. (Prepared 11-8-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Kodiak Island	Halibut	0.3	1.2	3.8
Gear: Pot	Tanner crab	0.1	0.4	0.1
Target Species: Pacific cod	R.king crab	0.0	0.0	0.0
	Salmon	0.0	0.0	0.0
Inclusive Dates:	Herring	0.0	0.0	0.0
December 87 - March 88	Commercial			
Vessels Observed: 3	Pacific cod	77.3		
Trips Observed: 4	Pollock	0.1		
Hauls/Sets Observed: 58	Flounder	0.3		
Total Landing: 36.4 mt	Sablefish	T		
Stat. Areas Observed:	Rockfish	T		
525731 525805 535732	Other	21.8		
535733 535802 535803				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 41.43 mt.

8788pots.nov

Appendix A.25 Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game for the years 1987-1989. (Prepared 11-8-89)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Eastside Kodiak Is	Halibut	T	T	0.1
Gear: Midwater Trawl	Tanner crab	T	0.1	T
Target Species: Pollock	R.king crab	0.0	0.0	0.0
	Salmon	T	0.1	0.3
	Herring	T	0.3	T
Inclusive Dates:	Commercial			
01 Jan 87 - 31 Dec 89	Pacific cod	1.2		
Vessels Observed: 23	Pollock	97.9		
Trips Observed: 61	Flounder	0.4		
Hauls/Sets Observed: 161	Sablefish	T		
Total Landing: 5582.3 mt	Rockfish	0.1		
Stat. Areas Observed:	Other	0.4		
515630 515700 515730				
525630 525702 525731				
525732 525802 525805				
525807 535632				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 5464.041 mt.
8789mwpl.nov

Appendix B.1. Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game, 1987-1989. (Prepared 5-11-90)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Bering Sea	Halibut	1.8	18.3	31.0
Gear: Bottom Trawl	Tanner crab	0.1	16.5	2.2
Target Species: Mixed	R. king crab	T	0.2	0.4
	Salmon	T	0.1	0.2
Inclusive Dates:	Herring	T	T	T
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 13	Pacific cod	29.0		
Trips Observed: 17	Pollock	45.2		
Hauls/Sets Observed: 263	Flounder	21.6		
Total Landing: 2935.3 mt	Sablefish	0.1		
Stat. Areas Observed:	Rockfish	T		
625531 625600 635504	Other	2.2		
635530 645433 645439				
645501 645509 655400				
655409 655430 655500				
655530 665401 665409				
665430				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
 2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.
- T = trace, less than 0.05
0.0 = no catch.
Sum of visually estimated catch = 5160.36 mt.

Appendix B.2. Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game, 1987-1989. (Prepared 5-11-90)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	---
			No./mt	Kg/mt
	Prohibited			
Area: Bering Sea	Halibut	3.5	35.2	60.6
Gear: Bottom Trawl	Tanner crab	0.3	38.0	4.7
Target Species: Pacific cod	R.king crab	T	T	T
	Salmon	T	0.1	0.2
Inclusive Dates:	Herring	T	T	T
1 Jan - 31 Dec 1987-1989	Commercial			
Vessels Observed: 10	Pacific cod	48.4		
Trips Observed: 12	Pollock	24.1		
Hauls/Sets Observed: 164	Flounder	20.3		
Total Landing: 1228.5 mt	Sablefish	0.1		
Stat. Areas Observed:	Rockfish	T		
625531 625600 635504	Other	3.3		
635530 645433 645501				
655400 655409 655430				
655500 655530 665401				
665430				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 2153.64 mt.

Appendix B.3. Bycatch rate of prohibited species and species composition in domestic commercial fisheries as observed by the Alaska Department of Fish and Game, 1987-1989. (Prepared 5-11-90)

Catch Details	Species	1	2	
		Catch (%)	---Bycatch---	
			No./mt	Kg/mt
	Prohibited			
Area: Bering Sea	Halibut	T	T	T
Gear: Midwater Trawl	Tanner crab	T	0.2	T
Target Species: Pollock	R.king crab	0.0	0.0	0.0
	Salmon	T	T	0.1
Inclusive Dates:	Herring	T	0.1	0.1
1 Jan - 31 Dec 1987-89	Commercial			
Vessels Observed: 8	Pacific cod	2.2		
Trips Observed: 12	Pollock	97.5		
Hauls/Sets Observed: 50	Flounder	0.2		
Total Landing: 3104.2 mt	Sablefish	T		
Stat. Areas Observed:	Rockfish	T		
655409 655430 655500	Other	T		
665430 675430				

1. Catch (%) refers to total catch brought on deck and is based on the observed weight of fish caught or, for longline and pot gear, the number of fish caught. Species proportions in individual trawl tows (or sets of longline/pot gear) were determined by observer's samples and expanded to the total tow weight which was visually estimated by the skipper or observer.
2. Bycatch = kg or no. per metric ton of landed fish (whole fish, all species, including landed discard) as listed on the fish ticket. Longline and pot gear kg/mt was generated from the average weight of those fish which were weighed.

T = trace, less than 0.05

0.0 = no catch.

Sum of visually estimated catch = 2996.27 mt.

80

SPECIES CODE LIST

<u>SPECIES</u>	<u>CODE</u>	<u>SPECIES</u>	<u>CODE</u>
Sablefish (Blackcod)	710	Thornyhead Rockfish	143
Deep Water Flatfish	118	Unspecified Demersal Rockfish	168
Shallow Water Flatfish	119	Bocaccio Rockfish	137
Flatfish-General	120	Canary Rockfish	146
Arrowtooth Flounder	121	China Rockfish	149
Flathead Sole	122	Copper Rockfish	138
Rock Sole	123	Quillback Rockfish	147
Dover Sole	124	Redstripe Rockfish	158
Rex Sole	125	Rosethorn Rockfish	150
Butter Sole	126	Silvergray Rockfish	157
Yellowfin Sole	127	Tiger Rockfish	148
English Sole	128	Yelloweye Rockfish	145
Starry Flounder	129		
Petrale Sole	131	Unspecified Pelagic Rockfish	169
Sand Sole	132	Black Rockfish	142
Alaska Plaice	133	Blue Rockfish	167
Greenland Turbot	134	Dusky Rockfish	154
		Widow Rockfish	156
Pacific cod	110	Yellowtail Rockfish	155
Pollock	270		
		Unspecified Slope Rockfish	144
Atka Mackerel	193	Pacific Ocean Perch	141
		Northern Rockfish	136
Smelt	510	Rougeye Rockfish	151
Eulachon	511	Sharpchin Rockfish	166
Capelin	516	Shortraker Rockfish	152
		Redbanded Rockfish	153

DELIVERY CONDITION CODES

1	Whole fish (foodfish)	19	Belly flaps (meat)
2	Whole bait	20	Filletts with skin and ribs
3	Bled only	21	Filletts with skin, no ribs
4	Gutted only	22	Filletts with ribs, no skin
5	Headed and gutted	23	Filletts, no skin or ribs
6	Headed and gutted, with roe	30	Surimi
7	H & G, Western cut	31	Minced fish
8	H & G, Eastern cut	32	Fish meal
9	H & G, with pectoral girdle	33	Fish oil
10	H & G, tail removed	34	Milt
11	Kirimi	35	Stomachs (organ)
12	Salted and split	36	Octopus/squid mantles
13	Skate 'wings'	37	Split, no backbone
14	Roe only		
15	Pectoral gridle only	97	Other-specify
16	Heads	98	Discarded at sea (whole)
17	Cheeks or chins	99	Landed discard

Note: Main products should be reported with the appropriate listed code. Additional products from the same fish should be reported with the appropriate product code preceded by the letter 'A'.

APPENDIX D. A bibliography of groundfish reports prepared or co-authored by Westward Region staff, 1987-1990.

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- Owen, D. 1988. A Bottom Trawl Survey on the West Side of Kodiak Island: Viekoda Bay, Spiridon Bay, and Kupreanof Strait, November 1987. ADF&G RIR No. 4K88-28.
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- Owen, D. 1990. Incidental Catch of Marine Mammals and Seabirds by Domestic Groundfish Vessels in Alaska (1978-1989). (Revision of 4K88-33). ADF&G RIR No. 4K90-9.
- Watson, L., editor. 1989. ADF&G Manual for Biologists Aboard Domestic Groundfish Vessels. ADF&G Unpublished Report.
- Watson, L. 1990. ADF&G Groundfish Observer Report for the Alaska Fisheries Development Foundation Flatfish Project at Kodiak, Alaska, August 1988 - July 1989. CONFIDENTIAL ADF&G RIR No. 4K90-17.
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